

# JOURNAL of the American Veterinary Medical Association

FORMERLY  
**AMERICAN VETERINARY REVIEW**

(Original Official Organ U. S. Vet. Med. Ass'n.)

EDITED AND PUBLISHED FOR

The American Veterinary Medical Association

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# **JOURNAL**

## **OF THE**

### **American Veterinary Medical Association**

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H. Preston Hoskins, Secretary-Editor, 716 Book Building, Detroit, Mich.

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### **MORE NARCOTIC LEGISLATION**

Legislation is now pending in Congress<sup>1</sup> proposing to amend the Harrison Narcotic Act, so as to empower collectors of internal revenue to refuse registration to any physician, dentist or veterinarian, addicted to the use of any drug covered by that Act. The proposed amendment makes no provision for a collector who sits in judgment to get adequate evidence upon which to determine whether an applicant for registration is or is not so addicted. The applicant is not even given the privilege of a hearing before registration is refused, nor is any provision made to insure the appointment of collectors who will be qualified, by education and experience, to determine whether the veterinarian (physician or dentist) applying for registration is a narcotic addict or not. Furthermore, the decision of the collector is final, from which no appeal may be made.

The proposed legislation would even deny to any veterinarian convicted of any violation of the Harrison Narcotic Act, intentional or otherwise, the right to register for a period of one year from the first day of July next following the day of such conviction.

<sup>1</sup>S. 4085, A Bill to strengthen the Harrison Narcotic Act of December 17, 1914, as amended, and for other purposes. H. R. 11612, A Bill to amend an act entitled "An Act to provide for the registration of, with collectors of internal revenue, and to impose a special tax upon all persons who produce, import, manufacture, compound, deal in, dispense, sell, distribute or give away opium or coca leaves, their salts, derivatives, or preparations, and for other purposes," as amended.

tion. If a veterinarian should overlook the renewal of his registration, on or before July 1, and then prescribe a narcotic on July 2, he would be violating the Harrison Narcotic Act and might have to pay a fine not exceeding \$2,000 or go to prison for a term not exceeding five years, or both, in the discretion of the court. Both the fine and the imprisonment are discretionary. The refusal of registration is not.

There are several other features of the proposed amendments which are equally objectionable to veterinarians. Physicians and dentists find themselves in the same boat. The American Medical Association has already filed a protest against the enactment of the proposed legislation, which, by the way, has the active support of the Treasury Department. The purpose of this Bill, according to Assistant Secretary of the Treasury Andrews, is "to clear up certain points which have been raised in certain courts to the disadvantage of the government."

If our members believe that such legislation should not be enacted, they should, individually and collectively, address protests to their respective senators and representatives. Similar protests should be sent to the Committee on Finance of the Senate and to the Committee on Ways and Means of the House of Representatives. One of the strongest reasons which can be given for opposing this legislation is the fact that the veterinary practice acts in the various states fully cover the situation. In most states a veterinarian's license may be revoked for proper cause. Chronic addiction to a narcotic would certainly be sufficient cause for revoking a veterinarian's license. The various state boards are certainly better judges of whether or not a veterinarian is qualified to practice than the average collector of internal revenue, who does not necessarily have any training that would so qualify him.

As has been so appropriately pointed out by no less an authority than Dr. Wm. C. Woodward, Executive Secretary, Bureau of Legal Medicine and Legislation, American Medical Association:

The fact that Congress may not have authority to confer on the Treasury Department the power it here seeks does not seem to have occurred to those who drafted this bill. To determine who is and who is not fit to prescribe, administer and dispense narcotic drugs is to regulate the practice of medicine, whether that determination is based on supposed narcotic addiction or on any other grounds; and the regulation of the practice of medicine within a state is beyond the power of Congress.

---

Brain power, and not lung power, will solve the farmer's economic problems.—*L. J. Taber.*

## THE HOG CHOLERA SITUATION

Conflicting reports continue to filter in relative to the hog cholera situation throughout the country. It would appear that the disease has been much worse in some places than in others, due to local conditions. This, of course, was to be expected. The epizootic which has caused such a heavy financial loss to the hog-raisers throughout the Corn Belt has been the subject of an unusual amount of newspaper discussion, in both the news and editorial columns. It is interesting to note that by far the greater majority of the editors who have expressed themselves on the subject, particularly in Iowa, Illinois, and Indiana, have been quick to place most of the blame on the farmers themselves. The Champaign (Ill.) *News-Gazette* expresses the following opinion:

When the hog-raisers of Illinois start out to fight hog cholera they learn early in their efforts that an ounce of prevention is worth 1,000 pounds of cure. In the case of hog cholera there is no cure. There is, however, a safe, practical and almost certain preventive and hog cholera never will be conquered until that fact is driven home. \* \* \* The loss of thousands of dollars could, in all probability, have been prevented had vaccination been general, according to men who have studied hog diseases for years. Immunization is advised by authorities. \* \* \* Vaccination was gaining headway until some farmers characterized immunization as a fad. The result is cholera to such an extent that it is now almost out of control.

After directing attention to the fact that the present "epidemic" is the most serious for many years, the Alexandria (Ind.) *Times-Tribune* goes on to say:

For the last five years there has been comparatively little cholera in Indiana and, as a result, many farmers have dispensed with immunizing their hogs. They were willing to take a chance, especially in view of the fact that economic conditions often made the immunization process a financial burden. The present epidemic found comparatively few hogs immunized and consequently they were ready victims of the malady.

The *Kansas City Star* usually has a correct view with regard to situations confronting the farmer and points out that the absence of cholera from many communities for a period of years has caused hog-raisers to neglect vaccination, the only known means of protection. The statement is made:

Hogs are on an extremely profitable basis. Farmers are justified in using more than the usual precautions to prevent their herds from becoming infected.

The following "local," taken from the Louisville (Ky.) *Times*, is an example of many such items that have been published:

Henry County farmers have suffered a loss of \$150,000 from the ravages of hog cholera, according to a report of Hoyt Hardin, county agricultural agent. Hardin said that the skies of Henry County are lit up each night from fires in which farmers are cremating porkers killed by the dreaded disease.



An entirely different angle of the situation, and one that will be all too well appreciated by many veterinarians, is presented by a writer in the Mt. Sterling (Ill.) *Democrat-Message*:

In a desperate effort to make it appear that they are earning their salaries, a number of farm advisors of this state are branching out into different lines of veterinary practice, in violation of the federal law under which they operate. Under the pretense of "saving the farmers a veterinary bill," they order and distribute hog cholera serum and virus and other biologics. In most cases they furnish the serum and virus and vaccinate two or three hogs to show the farmer how it is done, and then let him do the rest, while the salaried farm advisor stands and looks on, but it is reported that in some cases the said farm advisor goes the whole route and vaccinates the whole herd, all of which is in direct violation of the principle of the Smith-Lever law and of the Veterinary Practice Act of this state. We find these men carrying on so-called "educational work" in a way that is actually encouraging subterfuge and even law violation.

The attitude taken by many newspapers throughout the Corn Belt, that farmers have nobody to blame but themselves, is reflected in the following editorial which appeared in the Lagro (Ind.) *Press*:

The farmers are much alarmed by the many outbreaks of cholera in this county, and it is impossible to procure serum for vaccination. There is only one sure way against loss and that is to sell all marketable hogs. This condition of affairs could have been avoided had the farmers vaccinated their pigs when they could have procured serum and made their herds safe from this disease at a very paltry cost. It appears the serum manufacturers only make enough to supply the immediate demand, and when an excessive amount is needed, as at present, they cannot supply it. It takes much more serum and the cost is much greater to vaccinate a matured hog than if the treatment is given at weaning time, and the risk is not so great.

That the heavy losses caused by the ravages of hog cholera affect the city dweller, in addition to those who actually lose the hogs, is pointed out by the Peoria (Ill.) *Journal*, in the following editorial:

The problem, while primarily another of the problems the farmer must face in his eternal gamble with nature, is also of concern to the city resident—especially the resident of cities like Peoria—because the common prosperity of both is dependent to some extent on the returns the farmer gets for his outlay. Burning hogs in all of the three states involved is bound to be reflected in the price of pork. Already it has mounted, and while most other products have decreased so much that the increase is not a hardship, it will nevertheless be noted by the careful buyer.

Rents are decreasing. Living costs generally are lower than they have been. Nevertheless, farmers who fail to inoculate their hogs are pursuing the penny-wise, pound-foolish policy with disastrous results to themselves and some inconvenience to the food buyers dependent upon them.

Politically, the cholera is another piece of bad luck for the national administration that has failed to give demanded farm relief.

Still another phase of the situation is commented upon by the Canton (Ill.) *Ledger*:

A very discreditable feature of the present epidemic is the fact that the hog cholera vaccine supply is not equal to the demand and that the

supply available is being sold at double the normal prices. The weakness of the law is demonstrated when hog growers can be victimized by profiteers who control the remedy, insuring the destruction of thousands of animals that might have been saved.

There will always be those who take advantage of situations such as the one under discussion. Unquestionably serum has been selling too cheap. As a matter of fact, most serum-producers have made very little money, if any at all, during recent years. Some advance in the price of serum has been justified, even with the unusual demand of recent months. Even though producers have been relieved of the necessity of testing serum, during the present emergency, and thereby no small cost item temporarily eliminated, expenses in other directions have more than offset this item in their efforts to increase production very rapidly. Hogs suitable for virus and serum production have been hard to get and producers have found themselves bidding against each other to get these necessary supplies. Some advance in the selling price of serum was inevitable. There unquestionably have been numerous instances of gouging, but these have undoubtedly been upon the part of concerns having very little regard for their good name.

### HONORING DOCTOR MOHLER

A copy of the preliminary program of the annual meeting of the American Society of Animal Production to be held in Chicago, November 26-27-28, has been received. This meeting will be concluded Sunday evening, November 28, with the John Robbins Mohler Dinner. Professor H. P. Rusk, of the University of Illinois, will preside and Dean W. C. Coffey, of the University of Minnesota, will officiate as toastmaster. The program schedules the following after-dinner addresses:

"The Contributions of Dr. Mohler to Research,"

Dr. Adolph Eichhorn, Director, Veterinary Department, Lederle Laboratories.

"Dr. Mohler and the Meat Industry,"

Dr. R. F. Eagle, Assistant to the President, Wilson & Co.

"Dr. Mohler and His Official Family,"

E. W. Sheets, Chief, Animal Husbandry Division, Bureau of Animal Industry, U. S. D. A.

"The Contributions of Dr. Mohler to Live Stock Production,"

R. W. Dunlap, Assistant Secretary of Agriculture, U. S. D. A.

Response: "The Interrelation of Disease Control and Animal Husbandry Problems,"

Dr. John Robbins Mohler, Chief, Bureau of Animal Industry, U. S. Department of Agriculture.

It is highly gratifying to know that such an organization as the American Society of Animal Production has seen fit to recognize in this way the invaluable services to animal husbandry rendered by a distinguished veterinarian.

### PUZZLED

Occasionally it is necessary for the editor to fall back upon any ability as a Sherlock Holmes that he may be fortunate enough to possess. For example, in going over the discussion of the paper read by Dr. C. M. Carpenter, at the Lexington meeting, we were somewhat puzzled to decide just what had been said in several paragraphs. Evidently some of the terms used by the discussers were too technical for the stenographer who reported the proceedings.

In one sentence the words, "sang froid," appeared. Perfectly good French, by the way, but they did not fit in somehow. After reading the context, we deduced that the speaker had said "centrifuge." It was less difficult to figure that the words "per cent" should have been recorded as "placenta." In several places the words, "cut diseases," appeared. After considerable study, and with a little help from the context, it was decided that the discussion related to "goat" diseases.

Then we came upon the words, "Neola Tema." At first we thought that a new movie star had flashed across the page. However, it did not take much guessing to decide that it was a new name for our old friend, the melitensis organism. Bacteriological nomenclature is in a bad enough state now, without making matters worse. Then the word "litho" popped up several times. Calling into play a little knowledge of anatomy and pathology, we were able to deduce that the speaker was talking about lymph-nodes. We got some fun out of it, anyhow.

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### DUES ARE DUE

Statements for 1927 dues have been mailed to all members. It is hoped that these will not be put to one side and forgotten, making it necessary to send out reminders. Prompt attention to the payment of dues saves the Association money. Considering the small margin we have to work on, after taking the subscription to the JOURNAL out of the dues, we are compelled to conserve these resources as much as possible. It takes money, time and effort to send out additional notices. Relieve us of the necessity by remitting promptly. Please.

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### APPLICATIONS FOR MEMBERSHIP

(See October, 1926, JOURNAL)

#### FIRST LISTING

DAVIDSON, ARTHUR C. 178 Halesboro St., Gouverneur, N. Y.  
D. V. M., Cornell University, 1926  
Vouchers: Frank J. Baker and C. E. Hayden.



- HELL, HENRY V. M. D., University of Pennsylvania, 1904  
Wilton Junction, Iowa.  
Vouchers: Grant B. Munger and John W. Griffith.
- REED, FRANCIS IRVING D. V. M., Cornell University, 1926  
Morris, N. Y.  
Vouchers: H. W. Naylor and W. A. Hagan.
- ROBERTS, HENRY POWELL D. V. M., Ohio State University, 1918  
Edgeley, No. Dak.  
Vouchers: John H. Winslow and J. B. Hollenbeck
- SHARP, MILTON R. D. V. M., Colorado Agricultural College, 1926  
State College, N. Mex.  
Vouchers: H. E. Kingman and H. L. Morency.
- SPEVACK, VICTOR D. V. S., New York University, 1919  
1665 Bedford Ave., Brooklyn, N. Y.  
Vouchers: Cheston M. Hoskins and Peter I. Amsher.
- STARR, LELAND E. D. V. M., Ohio State University, 1913  
56 Hull Ave., Freehold, N. J.  
Vouchers: O. V. Brumley and P. F. Runyon.
- WISNICKY, WALTER D. V. M., Kansas State Agricultural College, 1926  
1031 Williamson St., Madison, Wis.  
Vouchers: B. A. Beach and F. B. Hadley.

### Application Pending

#### SECOND LISTING

- Goodman, Laurence William, 40 W. 61st St., New York, N. Y.  
Schmees, H. W., 1442 E. 23rd St., Oklahoma City, Okla.  
Shapera, Sol., 305 W. Boston Post Road, Mamaroneck, N. Y.  
Washburn, Robert E., 26 Washington St., Gloversville, N. Y.  
Wilcox, Arthur A., LaGrange, Ohio.

The amount that should accompany an application filed this month is \$5.42, which covers membership fee and dues to January 1, 1927, including subscription to the JOURNAL.

### COMING VETERINARY MEETINGS

- Illinois State Veterinary Medical Association. Lexington Hotel, Chicago, Ill. Nov. 29-30, 1926. Dr. W. H. Welch, Secretary, Lexington, Ill.
- New York City, Veterinary Medical Association of. Academy of Medicine, 17 W. 43rd St., New York, N. Y. Dec. 1, 1926. Dr. C. G. Rohrer, Secretary, 40 W. 61st St., New York, N. Y.
- San Diego-Imperial Veterinary Medical Association. San Diego, Calif. Dec. 1, 1926. Dr. W. G. Oliver, Secretary, 3821 Arizona St., San Diego, Calif.
- U. S. Live Stock Sanitary Association. La Salle Hotel, Chicago, Ill. Dec. 1-2-3, 1926. Dr. O. E. Dyson, Secretary, Live Stock Exchange Bldg., Wichita, Kans.
- B. A. I. Veterinarians, National Association of. Chicago, Ill. Dec. 1-2-3, 1926. Dr. J. S. Grove, Secretary, 1715 Belmont Ave., Fort Worth, Tex.
- Southeastern Michigan Veterinary Medical Association. Detroit, Mich. Dec. 8, 1926. Dr. H. Preston Hoskins, Secretary, 716 Book Bldg., Detroit, Mich.

Central Michigan Veterinary Medical Association. Otsego Hotel, Jackson, Mich. Dec. 9, 1926. Dr. W. N. Armstrong, Secretary, Concord, Mich.

Nebraska State Veterinary Medical Association. Grand Island, Nebr. Dec. 13-14, 1926. Dr. Geo. A. Young, Secretary, Syracuse, Nebr.

Chicago Veterinary Society. Great Northern Hotel, Chicago, Ill. Dec. 14, 1926. Dr. J. B. Jaffray, Secretary, 2956 Washington Blvd., Chicago, Ill.

Massachusetts Veterinary Association. 20th Century Club, 3 Joy St., Boston, Mass. Dec. 15, 1926. Dr. H. W. Jakeman, Secretary, 44 Bromfield St., Boston, Mass.

Western New York Veterinary Medical Association. Buffalo, N. Y. Dec. 16, 1926. Dr. F. F. Fehr, Secretary, 243 So. Elmwood Ave., Buffalo, N. Y.

Delaware Veterinary Medical Association. Dover, Del. Dec. 17, 1926. Dr. C. C. Palmer, Secretary, University of Delaware, Newark, Del.

Kansas City Association of Veterinarians. New Baltimore Hotel, Kansas City, Mo. Dec. 21, 1926. Dr. J. D. Ray, Secretary, 400 New Centre Bldg., Kansas City, Mo.

American Association for the Advancement of Science. Philadelphia, Pa. Dec. 27, 1926 to Jan. 1, 1927. Dr. Burton E. Livingston, Secretary, Smithsonian Institution Bldg., Washington, D. C.

Nevada State Veterinary Association. Reno, Nev. Jan. 3, 1927. Dr. Edward Records, Secretary, University of Nevada, Reno, Nev.

Pennsylvania Conference of Veterinarians, University of Philadelphia, Pa. Jan. 4-5, 1927. Dr. Louis A. Klein, Dean, 39th St. & Woodland Ave., Philadelphia, Pa.

Pennsylvania State Veterinary Medical Association. University of Pennsylvania, Philadelphia, Pa. Jan. 4-5, 1927. Dr. H. R. Church, Secretary, Harrisburg, Pa.

California Veterinary Conference, University of. Davis, Calif. Jan. 4-5-6-7, 1927.

Maine Veterinary Medical Association. Waterville, Me. Jan. 12, 1927. Dr. A. J. Neal, Secretary, 324 Essex St., Bangor, Me.

Kansas Veterinary Medical Association. Topeka, Kans. Jan. 12-13, 1927. Dr. Chas. W. Bower, Secretary, 1128 Kansas Ave., Topeka, Kans.

- Minnesota State Veterinary Medical Association. Radisson Hotel, Minneapolis, Minn. Jan. 13-14, 1927. Dr. C. P. Fitch, Secretary, University Farm, St. Paul, Minn.
- Cornell University, Nineteenth Annual Conference for Veterinarians at. Ithaca, N. Y. Jan. 13-14, 1927. Dr. V. A. Moore, Dean, N. Y. State Veterinary College, Ithaca, N. Y.
- Ohio State Veterinary Medical Association. Columbus, Ohio. Jan. 13-14, 1927. Dr. W. R. Hobbs, Secretary, Ohio State University, Columbus, Ohio.
- California State Veterinary Medical Association. Sacramento, Calif. Jan. 13-14-15, 1927. Dr. E. H. Barger, Secretary, Davis, Calif.
- Mississippi State Veterinary Medical Association. Hattiesburg, Miss. Jan. 17-18, 1927. Dr. Wilbur McPherson, Secretary, Brookhaven, Miss.
- Indiana Veterinary Medical Association. Indianapolis, Ind. Jan. 18-19-20, 1927. Dr. R. H. Boyd, Secretary, 446 E 10th St., Indianapolis, Ind.
- Iowa Veterinary Association. Hotel Savery, Des Moines, Iowa. Jan. 18-21, 1927. Dr. E. R. Steel, Secretary, Grundy Center, Iowa.
- Arkansas Veterinary Association. Hotel Marion, Little Rock, Ark. Jan. 19, 1927. Dr. Hubert Shull, Secretary, 414 W. 3rd St., Texarkana, Ark.
- Maryland State Veterinary Medical Association. Medical Hall, Baltimore, Md. Jan. 20, 1927. Dr. E. M. Pickens, Secretary, College Park, Md.
- Oklahoma State Veterinary Medical Association. Huckins Hotel, Oklahoma City, Okla. Jan. 24-25, 1927. Dr. C. H. McElroy, Secretary, Stillwater, Okla.
- Michigan State College Short Course for Veterinarians. East Lansing, Mich. Jan. 24-28, 1927. Dr. Ward Giltner, Dean, East Lansing, Mich.

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### STATE BOARD EXAMINATIONS

- Florida State Board of Veterinary Examiners. Gainesville, Fla. Jan. 11-12, 1927. Dr. A. L. Shealey, Secretary, University of Florida, Gainesville, Fla.
- Texas State Board of Veterinary Medical Examiners. San Antonio, Texas. Jan. 17, 1927. Dr. R. G. Flowers, Secretary, 3rd & Main Sts., Fort Worth, Texas.



## MUNICIPAL MILK AND DAIRY INSPECTION\*

By E. D. KING, JR., Valdosta, Ga.

*City Meat and Dairy Inspector*

The purpose of this paper is not to review technic, nor regulations, but to suggest methods of practical application of what we already know, to the work of milk hygiene.

The writer appreciates the honor of being permitted to present a paper to the Section on Sanitary Science and Food Hygiene, composed as it is of the experts and specialists of our profession, which profession is better informed on the various problems that affect the milk supply from cow to consumer than any other profession. This places me in the position of attempting to present my specialty to the highest authority on the subject, hence your charitable indulgence is requested.

Let me preface what I have to say on the subject by advising you that it is my honest, humble opinion that our major problem in this work is *education*.

Education, properly applied for a sufficient length of time, will correct anything, and we must dispense it from street-corners, verbally, in newspapers, and visually in our picture-shows, and with lanterns and slides on all possible occasions.

*Visualize and repeat* and you have the Alpha and Omega of education, as these two things still shine with increased brilliancy in the world of education, having survived all reforms and experiments, and stood the test of time. They are within easy reach and to try them is to be pleased with your results. ■

The average citizen is uninformed, and our city governments are made up of average citizens. Average citizens are uninterested because they are uninformed. Educate them and they become interested and active.

Those of you who served in the World War know of "indirect fire" and some great sage has said that "knowledge is power." This can be applied to the peace-time pursuits with the same efficiency as it was to the activities of armies in combat.

Keep in mind two things with relation to indirect fire, viz: The doctors know the importance of the work and the women are interested and, by the way, the women spend 85 per cent of the money that finds its way into the hands of the food-venders.

\*Presented at the sixty-third annual meeting of the American Veterinary Medical Association, Lexington, Kentucky, August 17-20, 1926.

Education of the right kind will bring to bear on these dealers enough economic pressure to change their views as to sanitation, —or change their methods of gaining a livelihood.

This has been demonstrated in Valdosta, where the meat supply was once all killed outside of an abattoir, and when the abattoir was built three years ago 60 per cent was still killed in the woods and lots, and the last annual report showed one-half of one per cent killed outside of the abattoir.

The purchasing power of the women is a powerful force for good, in that they can bring the most obstinate food-vender to terms by purchasing from the dealers who protect the health of their customers, whether for business or altruistic reasons.

Don't say, "It can't be done."—You may go around the corner and find a little Negro doing it.

The objective of milk hygiene is to get enough sanitation to protect the public health with no more expense than will leave the producer a living income and fair profit for his investment and labor, and to encourage the use of milk by all citizens, and there are plenty of scientific data endorsed by nutrition experts to make this possible.

Statistics show that we do not use enough milk per capita, which is important from the viewpoint of maintaining a high standard of citizenship, as undernourishment is a serious handicap to the development of the best physical and mental types of men and women.

One quart of milk is equal in food value to the following:

- $\frac{3}{4}$  pound lean beef,
- $\frac{4}{5}$  pound lean pork,
- $\frac{3}{5}$  pound ham,
- 8 eggs,
- 3 pounds fresh codfish,
- 2 pounds chicken,
- 1 pint oysters,

The above comparisons of food value speak eloquently for milk in the diet from a standpoint of economy as well as vitamin content and digestibility and availability of the food elements in milk.

The "reasons why" we should consume more milk (one quart per capita) than the present two-fifths of a pint are too numerous and well known to justify my taking up your time by their enumeration, but the fact that one authority sums up the proportion so well by saying that "no family of five should buy meat

until three quarts of milk have been procured" seems to warrant its inclusion.

This brings us to the scene of action. Before you can demonstrate your salesmanship, you must have something to sell, and in this case it is a milk supply like Caesar's wife—above suspicion.

To have a safe milk supply that can be recommended to consumers, provision must be made against tuberculosis, typhoid, scarlet fever, septic sore throat, and other diseases such as infantile diarrhea, and we must insist upon methods of handling in use at the point of production and from there to the ultimate consumer that will insure its purity, safety and chemical standard. This must be accomplished by education of all concerned. You may ask if this will pay. The answer is positively and emphatically, "YES!"

Consumers should be reached with the information that milk must be properly handled and refrigerated after delivery, and not left for dogs and cats to lick on the front steps, as the dog takes second place to the fly only, as a gatherer and distributor of parasites and disease.

#### COOPERATE WITH THE FAMILY PHYSICIAN

In your educational work always point out that the family physician can be of great service in advising how to get the best results from good milk, and never discuss modification of milk with consumers, further than to advise them that modification is the province of the family physician, and that you will give him any data or analyses he wants.

Having partially outlined a program for a safe and wholesome milk supply, let me invite your attention to the fact that this can not be accomplished like the pseudo-athlete would take his exercise—in pill form—nor like the Afro-American Beau Brummel who would substitute cheap perfume for soap and water, but, like real artificers, we must be willing to labor long and hard, although results are slow and obstacles are numerous. But keep in mind that sages have told us, years ago, that "the darkest hour is just before day," and later authorities have said that "the world gets out of the way of the man who knows where he is going."

These expressions of faith in our undertakings are sometimes the means of making us take hold anew and carry to successful completion what seemed to be defeat.

The history of food inspection, were it available, would furnish ample evidence to substantiate what I am going to say about derelict food inspection services, in which we have every thing from what is called the "go-getter," who lets nothing prevent his acquitting himself and his profession creditably, to the class of operatives who are chiefly interested in Saturday night and payday, all of whom are, to their immediate associates, *the veterinary profession*, whether we like it or not. When a food inspection service breaks down, we are blamed for the failure. Sometimes this is right and sometimes it is not right.

When manufacturers sell machinery and it breaks down or wears out in too short a time, they investigate the cause and, if it is their fault, replace it.

When a food inspection service breaks down, the blame is placed on the operative and that ends it, and the opinion of the operative and his colleagues in that community is: "They are conscientious objectors to work," but this is not true in all cases. Still it is the belief and no provision is made to correct it.

#### LOCAL VETERINARIAN'S PLACE IN THE COMMUNITY

In this connection, it is strongly recommended that some form of supervision of our men in this work be attempted, as we are all judged by the representative of our profession in a given community. If we admit the fact that the local veterinarian is the veterinary profession to his community, we should seriously consider ways and means of looking after our good name, especially when he is a public official, as sometimes food inspection "falls down." This may be from lack of activity on the part of the worker, or from other causes, and in either case the worker will be blamed, and with him the veterinary profession. If our representative fails to function properly, we should furnish another representative, and if politics have been responsible we should warn the next applicant for the place, thus protecting the good name of the profession.

But, to go back to education, the sheet anchor of all progress, we should reach our people with the "reasons why" greater milk-consumption means greater efficiency and greater economy. As greater public confidence in the milk supply means greater consumption of milk and better nutrition and greater resistance to disease, so education, and *not* strikes, of milk dealers is the solution of problems between producer and consumer. Bring them to understand each other's problems and you will have laid a



foundation for a good milk supply and good will between the consumer and producer.

People will complain about three things, viz: street-car fares, milk prices and taxes, for some unknown reason. But let the same people walk into a grocery store and ask for eggs and on being told that they are 60 cents per dozen, tell the clerk that they were 50 cents yesterday. His answer is: "They are 60 cents today," and that ends the conversation. But not so with milk—the greatest amount of food for the amount invested—about which they continue to complain, although feed and labor fluctuate in price as much in this industry as do the essentials in other food-producing industries.

"CHEAP MILK IS EXPENSIVE AT ANY PRICE,  
PURE MILK IS BARGAIN ENOUGH.

B. A. I. slide, "*Clean Milk.*"

The food inspector who places quality and health protection first, and justifies a price that will let the producer live and make some profit, will, in the long run, better serve humanity, the public health and the dairy industry, without which we would have no milk, than by any other course.

Recently I called on one of my best milk men for a little improvement that made necessary the employment of more labor. He said he had to cut something already and asked me what he could cut. I told him to forget the cut, and add two cents per quart to his selling-price and give us quality, which he did and is now selling more milk than he was selling before.

Milk inspectors, as you know, have many problems that one never would suspect until he has had a milk supply to handle. He must know his men, their cattle, their equipment, their consumers, their employes and their problems, with which he must sympathetically assist them, and he must help keep his employes interested in the work. He must censure when necessary, and be as alert for something to praise. He must assume that the milk supply is his private business, give it the same study and attention he would give his private business, and weigh carefully every act or utterance of his as to its effect on the work. Do nothing and say nothing that may embarrass the work. Avoid discussions on other subjects because of their possible effect on the work.

As to system and technic I have nothing to offer, as you were amply trained in college and your alma mater is at your service, as well as your state live stock sanitary authorities, who in our case have never yet failed to supply my needs in support or advice. Your colleagues are always ready to give you any help you may ask, but remember that *you* will have to work out your problems regardless of the amount of help and advice you have available.

If you take a new service, put in the best equipment and help you can get, and if you take one already in operation, take everything over without criticism and go to work and require every one else in the department to do likewise, and gradually correct defects until it is up to standard. You will find various types of help in this work and have applicants to come well recommended who are as appropriate in the service as a skunk at a lawn party, but do not fly off the handle at this. Meet it as best you can, attempting in every way to improve the help, equipment and service.

#### FAMILY COW A SERIOUS PROBLEM

It was the intention to keep this paper free from any but the diplomatic technic, and from specific discussion of milk-handling, but the family cow, usually under no restrictions and fostered by most city governments as a necessity (political), is a serious problem for the milk inspector, in that this class of milk establishments is the most dangerous from a sanitary standpoint because they usually milk in a stable that is fearfully filthy, and often is found to be the hen-roost also. The milk is usually handled in the kitchen where chickens are dressed and dishes washed. The same water used for dishes, in the same sink, is often used for washing the milk utensils (if they may be called utensils), and sterilization is the unknown quantity.

Figure 1 shows a cow that had occupied one of these stables during a wet season and had been turned out after milking. Notice the tail drags on the ground and has several inches to spare, and can swing an ounce of liquid manure into the open-top bucket that is universally used in these establishments, at one swing, even if it should happen to wrap around the neck of the milker first.

The coating on the side of the cow is our old friend, "that flower of stock-yard fragrance," used to make things in the garden grow. We find it misused here, as a too liberal mixture will

retard the growth of children. *B. coli* is no less prevalent in the alimentary tracts of cattle than man, and fecal contamination of this kind could be expected to cause summer complaint in infants.

We are reliably informed that 85 per cent of the deaths from infantile diarrhea are in bottle-fed babies and if the milk used for these babies could be handled under the strictest sanitary conditions and modified by a physician, I feel sure that this death-rate could be materially reduced.

You will note that the greatest accuracy of focus did not obtain in making the photograph. This was caused by the fact that the owner was getting a shot-gun to protest against the making of the photo, and speed was essential, even at the expense of extreme accuracy of focus.

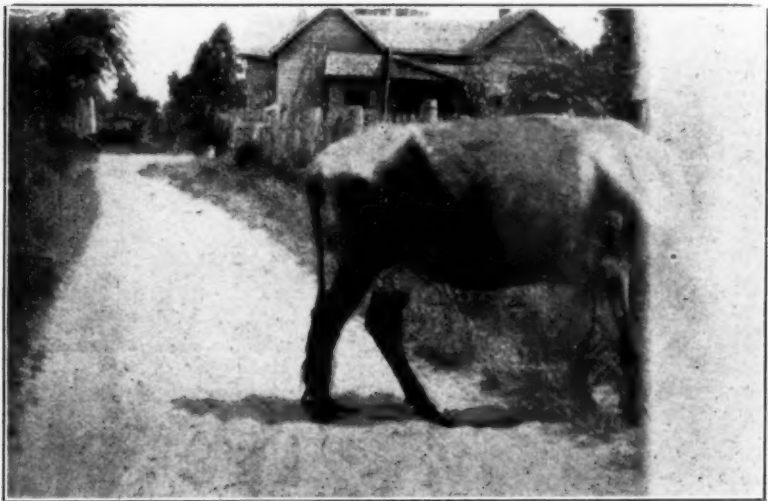


FIG. 1. The family cow.

In our case (Valdosta) the number of family cows has decreased from 300 (estimated) to 75, due largely to increased confidence in the milk supply. Many people having provided themselves with cows for the purpose of safety, now use milk from dairies, which they feel sure are properly handled. The individual family cow is not now considered a problem in Valdosta as we have passed that milestone on the road of progress.

In this connection one instance might be mentioned: A physician was accosted by a lady tourist and asked if he knew any place where she could get some milk from a "clean family cow." He admitted that he did not know of any such establishment,

but said that in the drug store (in front of which he was standing) plenty of good milk produced by a U. S. accredited herd, under strict sanitary conditions, could be had, and added that he was a physician. This clinches my statement that the "doctors know" what is, and what ought to be done. Do it right and they will support you.

Among the many small dealers of the individual-cow type, we find various reasons for the maintenance of such establishments and for the justification of the lack of proper sanitation.

One lady, when approached on the subject, said: "I handle my milk just like mother did and mother always had the best." To which I replied: "My mother thought she did also, but if I had to go over the same territory, I wouldn't drink it." "Oh, well, mother always had the best," she said. It was pointed out to her that mother drove a horse and buggy, and she used an automobile, with the former reply, "Mother always had the best." And that mother sent a note by a boy when she wanted to communicate with a neighbor, but she now had a telephone. Would she dispense with her automobile and telephone to do like mother used to do? "No, but mother always had the best." Getting a little closer to the gate (we were in her sanitary (???) stable) I mentioned the fact that mother never painted her face, but that she had a peach of a coat of it on her face. This did the work. She said: "What do you want me to do?" and produced good milk from then henceforth,—but soon abandoned the industry.

#### SUMMARY

1. Education is the major problem in milk hygiene.
2. Visual education is the most effective kind of education.
3. Visual education has proved its value in actual practice by improvement of many undesirable conditions.
4. More actual available food is obtained for the money spent for milk than any other food.
5. Doctors and women universally support milk-hygiene work.
6. The producer is entitled to a reasonable profit.
7. The reputation of the profession depends upon the individual operative and the public never forgets a failure. (Think this over.)
8. On accepting a milk inspection service, take what you find and do not criticize. You are responsible for what you leave, not what you find.
9. The family cow is a serious problem in milk control.

The slides are intended to show the various ways and means that are available to the educational worker.

That the meat and milk department is identified with the progressive element of the community, and must be to make progress.

That the closest cooperation is maintained with the educational institutions, as your future citizens must be prepared while they will take and retain impressions.

That the program must be "sold" to all active progressive agencies in the community.

That the U. S. accredited herd is the basis on which we have founded our program.

That the program of clean milk has been sold to producers and consumers.

That work is necessary and has been done in our case.

And that whoever attempts to do this work should know in advance, that he is taking a *JOB* and *NOT* a *POSITION*, and it might be added that he is the custodian of the good name of his profession in such cases.

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### "MUGGINS"

Lovers of horses will get quite a kick out of a story written by Frank M. King, entitled, "Muggins," which is appearing in a number of live stock papers throughout the country. Dr. R. H. McMullin, deputy live stock inspector for Los Angeles County, Calif., has forwarded a copy of the *Farm and Ranch Market Journal*, in which the story appeared recently. "Muggins" is described as a deep chestnut sorrel and built like a true Morgan, with short coupling and heavy muscles. His fine action and endurance have been the marvel of all who have seen him. In order that Muggins might have a permanent home for the rest of his days his former owner, Mr. Charles Camp, in July of this year, donated him to the Los Angeles Union Stock Yards Company, under a guarantee by Mr. McNaughton, general manager of the Company, that the pony would always have a comfortable place to live. "Muggins" is now about thirty-five years old and he receives many visitors in his big roomy pen, under a big shed in the yards. He is given just enough exercise in the alleys of the yards each day to make him enjoy his ration of sweet alfalfa hay, rolled barley and anything else that Mr. T. E. Johnson, the yards superintendent, thinks he would care for. "Muggins" enjoys the additional distinction of being the only horse living that actually took part in the big round-ups of range cattle from Texas to the Canadian border.



## MEAT HYGIENE\*

By F. H. S. LOWREY, *Toronto, Canada*

*Health of Animals Branch, Department of Agriculture*

In days gone by, meat hygiene and public health were more or less a police function, assumed under government auspices to prevent the spread of communicable diseases. With the advance of the times, meat hygiene from the standpoint of guarding public health has reached largely a scientific work by many federal governments, which has proved its worth and is highly endorsed.

In the execution of meat hygiene it may also render important service in veterinary police work, by detecting animal plagues, and also by extending a beneficial influence from a general hygienic standpoint to animal and man, by the complete harmless disposition of all products of diseases and their specific causes.

In order to impress the public in these modern days one cannot set aside the question of economics. Today this is inseparable from good business methods and cannot be ignored. In relation to meat hygiene the question of economy has a two-fold purpose. First, the education carried on by the federal inspection of meats and meat food-products gives to the consuming public more food value for the money expended and, secondly, makes it more profitable for the breeder and feeder of animals, intended for food purposes.

Meat hygiene, as conducted by the federal governments of the United States and Canada, has shown the breeder of food animals that he can realize more dollars for a sound healthy animal. It also discloses to the intelligent owner of stock obscure diseases, also the means and ways by which such diseases may be eradicated and prevented. The above situation in Canada is very noticeable in the province of Quebec. This province, through its own laws, places the loss of any diseased food animal, that can be traced, on the owner or first dealer. This makes for ideal conditions, inasmuch as the owner who bears the loss can take steps at once to learn and remedy the condition, and no one is more deserving of bearing the loss than the producer or first dealer. In human food, meat plays an important part, and the more wholesome the product, the more economical it becomes.

\*Presented at the sixty-third annual meeting of the American Veterinary Medical Association, Lexington, Kentucky, August 17-20, 1926.

The three-fold objective in meat hygiene is:

1. To protect the consumer from tainted and diseased meats.
2. To ensure proper sanitary conditions and cleanly conduct of operations.
3. To enforce true labeling and prevent adulteration.

To ensure these measures, we must consider the following:

1. Proper antemortem examination to detect diseases and other abnormal conditions.
2. Rigid postmortem examination to determine the wholesomeness of the meat for human food.
3. A close supervision of curing, canning or other processing of meats and meat food-products.

The writer has had nineteen years of experience in Canada under the federal laws governing meats and meat food-products, and must emphasize sanitation as the most outstanding requisite today. A diseased organ or carcass calls for a certain amount of handling to render it immune and if this work is carelessly executed, no purpose has been served. Personally, I would like to stress the importance of strict sanitary operations at all times, and may that ever be the objective of the meat hygienist. The operator should at all times so conduct himself that he can demand the highest standard from those over whom he has control.

#### THE PUBLIC IS CRITICAL

The public is naturally critical and doubtless will continue so. It behooves us then, as professional men, so to conduct our duties that we may merit public faith, whether we are engaged in private practice, as sanitarians or hygienists. There are plenty of evidences that the achievements of science in meat hygiene have made only slight impressions upon the public. Do not fail to remember that quality and character are fundamental if we are to stand the crucial test of the profession we represent. A careless, indifferent operator can do untold harm in the performance of his duties and thereby disqualify a whole service. Let us as veterinarians be ever on guard to pose and carry on at all times so as to impress favorably those with whom we come in contact.

The system of meat hygiene carried on by the federal governments of the United States and Canada ranks highest in the world's markets. Their products are accepted by every country in the world, when certified by government markings. It is very pleasing to be one of a staff so connected, whose standard is

accepted world-wide. Let us take heed then, as our system is no stronger than the weakest link, and we must be ever watchful for any laxity.

The provincial, state and municipal governments, who act largely through boards of health, have been too long neglectful of the necessity of intelligent action in the matter of meat hygiene. Once the public has become seized of the situation, they will insist upon the adoption, by the various municipal authorities throughout the country, of a system of dealing with this question. It does not appear to me there is any need or likelihood of conflict. Our federal governments are setting a fairly high standard and all that is required is for the municipal authorities to adopt regulations similar, with a view of rendering unmarketable diseased or otherwise unsound meats, which under present conditions cannot enter establishments engaged in export, interprovincial or interstate trade.

#### MUNICIPAL ABATTOIR A MODERN NECESSITY

The municipal abattoir is a modern necessity and must come. There are many among us, not yet old, who can well recollect when the number of hospitals in Canada could almost be counted on the fingers and when a proposal to erect an institution of this kind in a small town was looked upon as indicating a mild form of insanity. How many of the communities now possessing modern and up-to-date hospitals would be satisfied to do without them? A little consideration will, I think, demonstrate the utter impossibility of any federal department undertaking the supervision, in all the ramifications in the local meat trade in every town and village throughout our countries.

The whole problem rests upon the municipalities and without doubt the local veterinarian must be on guard to seize upon and advance the movement.

Meat hygiene in Canada embraces all food animals including poultry. The system carried on is largely identical with the United States. As for statistics, I feel these might be a burden and will simply quote percentages for tuberculosis throughout our country for the year 1925.

Cattle.....	7.41%
Hogs.....	25.75%
Poultry.....	4 to 5%

It occurs to me very frequently, in the performance of my duties throughout Canada, that our profession both in the

United States and Canada is bounding ahead rapidly and without doubt doing a large work both in the realm of meat hygiene and the suppression of contagious diseases. Insofar as I can learn and judge, we lead the world today and are producing results that coincide with public opinion. In times of prosperity and big issues there are always greater dangers of a catastrophe, and as professional men our objective should ever be quality in duties performed, not necessarily volume. If our standard is set high, and we maintain it throughout there will be no question of the reward we will merit from those who follow us to carry on.

#### DRIFTING OR ROWING

You are either drifting down stream with the tide and the dead ones, or you are pulling for all you are worth against the current of events. You cannot anchor, for life is one continuous voyage. You are either reading, studying, working, or you are fooling away your most valuable asset—time. If you are trying to improve yourself you are going ahead. If your brain is full of nonsense, you can bet your boots you are drifting down the stream.

#### NEW MAP SHOWS EXTENT OF BOVINE TUBERCULOSIS

A map of the United States, prepared by the Bureau of Animal Industry, U. S. Department of Agriculture, portraying by counties the extent of bovine tuberculosis in 1926, shows the excellent progress being made in eradicating the disease. In a few localities the resurvey shows a little more disease than shown on a similar map, issued two years ago. The new map, however, shows in general a marked decline in the degree of infection. Six different intensities of shading show graphically the success of all parts of the United States in controlling and eradicating this insidious foe.

A very marked increase in the number and extent of accredited areas, from which the disease has been practically eradicated, is apparent from a comparison of the 1924 and 1926 maps. A table shows that for the country as a whole the percentage of tuberculous cattle declined from 3.3 per cent, in 1924, to 2.8, in 1926.

The National Western Show will be held in Denver, Colorado, January 15-22, 1927.

## HOW AND BY WHOM IS THE FOOD HYGIENE IN YOUR COMMUNITY CARED FOR?\*

*By W. G. HOLLINGWORTH, Utica, N. Y.*

First and foremost, I wish to say that this would be a queer world if we all thought alike. I also wish to extend my thanks to the members of this Association for the privilege of appearing before you on this occasion. I assure you I fully appreciate the courtesy extended to me. I want to state that this subject is not a new thought; few vitally important subjects are new. It is, however, timely. My purpose in this paper will be to try and bring to your attention the fact that our profession is very lax in regard to public-health activities, and I can not conceive of a more appropriate audience, with whom to discuss the problems and difficulties of conditions that will lead to make members of our profession better citizens, cause them to be looked upon with more respect in their respective communities, and place ourselves on a par with other learned professions, than the Section on Sanitary Science and Food Hygiene of the American Veterinary Medical Association.

From time to time, you have had the privilege of listening to the ablest and most profound men of our profession, not only of this country, but of foreign nations, discuss problems of great interest to us all in a most masterly fashion. I have set for myself a much humbler, though possibly a not less useful, task in choosing for the subject of my address, "How and by Whom Is the Food Hygiene of Your Community Cared For?"

It is the diversified opinions of others that, when amalgamated by rightful arguments, enable us to get at the proof and to come to a just conclusion. As a matter of fact, the field of medicine has become so broad that even those possessed of the maturity, wisdom and experience of a long life devoted to medicine in its widest purposes would find it difficult to speak with authority on any but a limited aspect of the question at hand.

Medicine is a science which relates to the prevention, cure and alleviation of disease. Undoubtedly in most ancient times it dealt purely with the allaying of suffering. In those ages it had the closest relation with religion, for disease was looked upon as a visitation by an evil spirit, but as mankind became more civilized, it was seen that external conditions had something to

\*Presented at the sixty-third annual meeting of the American Veterinary Medical Association, Lexington, Kentucky, August 17-20, 1926.



do with disease, and man again commenced to learn a little regarding prevention, by studying the conditions under which the body was most likely to remain free from disease. Now, since medicine deals greatly with prevention, our chief object is the cause, and since the time of Louis Pasteur it has been demonstrated that a great proportion of sickness is due to bacteria. Now, such being the case, there is no doubt that food hygiene should be under the control of persons who have acquired the scientific knowledge, training and keen observation necessary to detect the abnormal conditions which such products are liable to undergo, thereby making the consumption of the same unwholesome.

#### PANACEA AND HYGEIA

The word hygiene comes to us through mythology. There was a goddess named Coronis, who married Apollo. A son was born to them, named Æsculapius. He lived with other gods until his great human heart, derived from his mother, induced him to give up the delights of life and go down and live among men so that he could practice the medical skill which his father had taught him, and which was so much needed among the mortals. Æsculapius went about doing good among the people. He also married, and from such union two daughters were born, one named Panacea, the other Hygeia. Panacea helped her father in many ways, gathering herbs and preparing his medicines for him to deal out.

Hygeia, being much impressed with the futility of trying to cure many cases, and realizing keenly that most of the sicknesses and suffering were the result of ignorance, took it upon herself to try and impart knowledge to the people, not only to *get* well, but mainly to *keep* well, especially by abstaining from partaking of such foods that might harm them. Her teachings are called hygiene, after herself. It was excellent judgment on the part of the Executive Board of this Association when they included food hygiene in this section, and made it the Section on Sanitary Science and Food Hygiene.

As soon as our profession becomes acquainted with the fact that this phase of our professional duties is to be enhanced, thereby rendering service and living up to the ideals of veterinary medicine, I predict that this division of our future programs will be extremely popular. Why? There are many veterinarians who are devoting a part or all of their time to municipal work.

When they look over the outline of subjects to be read and discussed at these meetings, and find that there is nothing in which they are interested, they will say, "We are not going to spend money and time attending the annual meeting and not be benefited." Now, things will be different. They will at once see the benefits to be received. New members will join the ranks. The advantages they will receive from the discussions of the papers will help them to carry out the duties that will enhance their work, make them more proficient and consequently better able to put into force new ideas and to know how to enforce them, thereby rendering service to their community. What can be done in one place can be done in others. Emerson said, "There is nothing impossible to him who will."

I feel that a veterinarian who devotes his energies along the lines of public health is placing himself in an enviable position in his community. He will be looked upon as a public benefactor. There is a slogan that is always well received: It is better to keep well than to get well.

#### VETERINARIAN AN IDEAL FOOD HYGIENIST

Health departments of practically every city are striving to bring about a better situation in regard to food hygiene. The knowledge of how to bring this about must be supplied them. The health officer is a busy man, attending to the various phases of health protection. He is only too anxious to be relieved of the responsibilities of caring for the wholesomeness of the milk, meat, poultry and fish that is consumed within his jurisdiction. The ideal person to give this information is the qualified veterinarian, and with the assistance and cooperation of the health officer, the magnitude of his duties are enormous.

Food is the first of the necessities of life. A national policy that safeguards and guarantees an adequate food supply is the primary consideration of a people. One of the most learned members of our profession has said, "It has become very clear that one of the functions of the veterinary profession is to protect the human family against the dangers of meat and dairy products as well as fish and poultry, and from the maladies of domesticated animals communicable to man."

Only as we educate the coming, as well as the present, generation to the science of human duty can we hope to eliminate disease in human as well as animal.

Pasteur, in closing his oration at the opening of the Pasteur Institute, in 1888, said: "There are two laws contesting with one another, the one a law of blood and death opening up each day new methods of destroying life, the other a law of health. Its only aim is to deliver mankind from the enemies that assail him. God only knows which of these will gain the upper hand." Now it is up to us as guardians of the health of animals as well as mankind to use every means at our disposal to enforce the laws of health.

*The Nation's Health* says: "The guardian of public health, no matter how well advanced and equipped, is obviously not going to prevent death, nor is it to be expected that he will eliminate disease and bring about a condition of affairs in which no one dies except of old age. But with the knowledge, which is slowly and painstakingly being stored for his benefit with growing armament of preventive and defensive medicine at his command, we may reasonably look to him to restrict little by little those forms of illness, whether endemic or epidemic, which destroy the young and hamper or devitalize those in the prime of life, since most of them are demonstrably, and all of them theoretically, preventable. It can not be accomplished without the sympathy and intelligent support of the community, for the best ally of hygienic science is an educated and health-respecting public."

It also says: "What we need now are better methods of diffusing health knowledge, and that is the task of the health educators of our various medical universities as well as our different medical associations."

#### COMMUNITIES WOULD DEMAND FOOD HYGIENE

There are hundreds of communities, which if they only understood what benefit food hygiene meant to their people, would ask for, yes, demand, recognition from our profession to aid in enhancing the lives as well as being able to prevent disease to a certain extent among their populaces.

To my way of thinking, our profession owes a duty to humanity, and that is to render such service, for the reason that we have been trained along those very lines, and consequently are the fitted persons who should fill the positions in charge of food hygiene in our communities; and also to meet the demand for the products of live stock, to care for the addition of 1,500,000 persons annually to our population. We must emphasize the necessity for increased production, especially live stock.

And since the agriculturist holds the key to the situation in the palm of his hand, in regard to supplying food, clothing and shelter for the human race, he must be encouraged to produce more, and in return he should receive the cost, plus a fair profit, for his work and investment.

The agriculturist and the veterinarian are very closely allied. We must cooperate, one with the other. One can not exist without the other. So, from the training and information that a qualified veterinarian has received, and by constantly informing himself of the duties he should render, he is of a dual purpose. First, to impart knowledge to the producer to increase his production and, secondly, to see to it that the public is properly cared for in regard to its food hygiene.

People should not be blamed for what they do not know or have never been told. It is up to some people to bring up for discussion the points that are necessary, so as to impart this knowledge, especially the officials of the community. They, the office-holders, are in office by the aid of the voting public, and naturally are guided by their sentiments. Now, who is better qualified to start such a campaign of education than the trained veterinarian?

#### WE CONTROL OUR FUTURE

The future of our profession is within the grasp of its members. They and they only can maintain its standing. Instead of selfishness and pessimism, let us be optimistic and unselfish, and grasp the opportunities that are knocking at our door for service and help. Let us devote some of our time along the lines of duty, and remember we are not here for ourselves alone, but for others and to render service, also to do a good turn whenever and wherever possible and so continue until the end comes.

Why are not more veterinarians associated with health department work? There are some who are interested and they deserve credit, for progress has been made. Why should we allow laymen to occupy positions, as heads of departments in our communities in charge of food hygiene, knowing that our professional education has much better fitted us for this phase of veterinary medicine? I, for one, can not understand. We were taught that we should live up to the highest ideals of our chosen vocation—the treatment of the diseases of animals—and use every means at our disposal to prevent the transmission of diseases of animals to man, either by contact or by partaking unconsciously of some of

the products of the same that are unfit for consumption. If I do not live up to the ideals of my chosen vocation, then I am not fit for its calling.

Are we afraid to attack this great evil? I say evil, because it is a great crime, a calamity, yes, an imposition on the populace, especially the poorer classes, for them to be offered food that is unfit for consumption, say meat from animals that were dressed under cold slaughter or butchered before they have had a chance to breathe their last, for a cheaper price than they can procure meat fit for food from a conscientious butcher. That very thing has happened in my city, and I thoroughly believe we had lots of company. But, I am thankful that for the last few years we have had an ordinance with teeth in it that put a stop to such nefarious doings.

It took fifteen years of hard work to convince the different officials of the necessity for such a law.

During the year 1925 there were inspected 12,815,534 pounds of meat and meat products, and 253,865 pounds were condemned. The same was sent to the tanks. This amounts to about 35 per cent of the products consumed. The remainder (65 per cent) was federal-inspected.

A city ordinance is a law of the state, within the meaning of the judicial code, as amended, the right of a state to delegate to municipal authority to determine what conditions of health regulations should become operative. And no law is any more operative than its administration.

#### SANITARY REGULATIONS NECESSARY

Sanitary laws and regulations are necessary in order that a community may be organized for its own protection, and obedience to those principles of hygiene is necessary in order that such person may live at the top of his physique and capacity. The operation of a local health department may include any measures reasonably calculated to promote the health of the community. A contract, properly safeguarded, may be entered into, and expenditures may be authorized to the extent that moneys have been made available by the municipal authorities. The organization of the department is more a matter of administration than law, but is more likely to be kept out of legal difficulties if it has an efficient personnel.

I have been told by veterinarians many times that they are not particularly fitted for this exalted position and also that



our profession should not be too active in public health work. In regard to the last sentence, I do not believe anything of the kind. My experiences are directly opposite. In regard to the first sentence, maybe they told the truth, but I think when a young man enters a veterinary college and matriculates he ought to familiarize himself with the requirements of the vocation which he is about to adopt for his life work, study the situation, think and ask himself this question: "Am I going to be a suitable representative of the veterinary profession?"

I believe the first impression is always the most lasting. I well remember the first lecture I heard in a veterinary college. I must confess my ideas were very much changed. The impressions the lecturer gave me were so forcibly absorbed that I never forgot them, and if I have attained any success in my career it was due to that masterly address. All of us ought to aspire to reach the pinnacle of our work, and in order to do so we must love our work and we should try to possess a good understanding of the greatest thing in the world, and that is a workable knowledge of natural law.

Now while I am reading this paper I am thinking about you. You can make yourselves a success if you try.

#### WHAT SUCCESS MEANS

Success does not mean merely the acclamation of the multitude which can be blown away by a shifting wind.

Success does not mean merely a social position which is often granted by the fawning crowd, that sets up an idol and worships it only to dash it from its pedestal and replace it with another.

Success does not mean merely money, a hardened cruel master who makes slaves of them who serve him.

But success means character with all that it implies.

Success means adherence to high principles in face of fierce opposition and insidious temptations.

Success means courage to take one's stand, not according to the number of people who will be on your side, but according to the inherent moral worth of that for which you shall take up the wage of battle.

Success means the ability to see straight and judge truly, and will tear the mask from the face of hypocrisy, thus to reveal her ugly, repulsive features.

Today we are living in the age of prevention. We know prevention is better than cure, and we know preventive medicine

is being tremendously advertised. Why does our profession not seek to get some glory from the principles advocated?

Public sentiment is clamoring for action along this line of thought. We know the populace is eager to enhance any movement that will lead to the longevity of life, and whatever means are brought out in this direction will be well received. The public will not find fault with money set aside to work out such a cause efficiently. As we know, it takes a vast amount of money to protect human life against its foes. The trouble with a great many communities is that their departments of health never have enough funds to carry on a successful campaign.

No community can afford to neglect its department of health, and no such bureau is fulfilling its requirements if it does not have an efficient veterinarian associated with it.

Just as soon as the communities awake from their Rip Van Winkle slumber, stop, look, listen and think, they are going to put into operation just what has been suggested and an efficient official is going to be placed at every avenue that leads to the goal of public health, and one of these will be a veterinarian. Now the next question is: Are we going to be equal to the occasion? Are we going to be ready to enter the door of opportunity, when it opens for part- or full-time officials, by adding this phase of our duty to others? If so, we are gradually and successfully going to retire from the horse-doctor age. The time is here now for all of us to try and influence young men to enter the veterinary profession, and we can truthfully tell them that the prospects are getting better and better. I am very optimistic in regard to our future, but we must get out and push.

To give some idea of the magnitude of the laudable work that we as a profession could do, I quote from the *American Journal of Public Health*, that out of 203 outbreaks of food poisoning, 72 per cent were due to made-up or manipulated animal-products, of which milk leads.

#### STANDARD MILK ORDINANCE

Milk inspection is at present under much discussion. This is greatly due to the chaotic conditions that exist, caused by the many sanitary codes which govern its production and handling. Under the present trend of thought, the sanitary codes are to be simplified in order to establish standards which would be reasonably high and at the same time practicable under average conditions, restricting the producer as little as possible as to equip-

ment and methods, and making a uniform milk ordinance throughout the nation.

That is the idea of the United States Public Health Service, under the direction of Surgeon General Hugh S. Cumming, who has asked the American Public Health Association to cooperate with him and select a committee with such intention. The vital necessity of such a measure is beyond a question of doubt. It will benefit the quality as well as the safety of our most important food.

At the St. Louis meeting of the American Public Health Association I suggested that that association ask, through the American Veterinary Medical Association, for the president to select a member of this body to act with the committee above mentioned, but my idea did not meet with approval for the reason that veterinarians did not seem to realize the needs or the necessity of enhancing public health. In short, they as a profession do not seem to interest themselves along that line. To tell the truth, I was much chagrined, so I asked myself this question: "Why should veterinarians allow themselves to be side-tracked?" Then I also asked myself: "Who's to blame?" Again I say our profession's future lies within the grasp of its members.

#### A DUTY WE OWE

We of the veterinary profession, as medical men, must not continue in this one-street-town fashion. We must be wide awake and develop business in other directions, and not let one phase of our duties get away from us. It is a duty we owe our nation, state, city, family and alma mater.

Times have changed, as we all know, and we must change with them. It is very evident that there is gradually developing a better feeling among physicians and health workers. They are now cooperating. All have the same object in view, so why would it not be a wise choice for us to affiliate with them when the opportunity comes?

I read with much interest the communication of Dr. C. C. Wang, of Pekin, China, to the editor of the *Journal* of the American Veterinary Medical Association, in the July number, pleading for veterinarians to render services in order to protect the human family from partaking of food (animal products) that is unfit for consumption. No doubt they need it in his country. But men, we need it in this country just as much, where only a certain part is under inspection.

Probably no other factor is so important in selling such activities as a sympathetic newspaper, for it is chiefly through the press that public opinion is molded. It is the most logical way to inform the largest number of people of what has been and is being done and accomplished.

I realize that one of the objections to being associated with public-health work is how can you expect a man, who has gone through the necessary course of education, and has incurred a very great expense, to go into the public-health field, when he has before him the tragedies constantly taking place in municipalities. Men who are able to devote their energies to the promotion of health, to the saving of innumerable lives, and to the prevention of sickness, are ruthlessly fired out of office for no other reason than politics. That does occur, but I want to tell you all communities are not alike.

I believe that if the chief of a department in public health, where life and death are at stake, does his duty, fearlessly and honestly, and remembers that a public office is a public trust, for the benefit of others, public sentiment will make known its ideas when necessary. An efficient department of health must have a thoroughly trained personnel. I think we all should be politicians, in the better sense of the word, but not corrupt ones.

I believe that inasmuch as this Association has recognized the value of food hygiene by including this subject in one of its sections at our annual meeting, such members who are personally interested in this phase of our professional duties should meet, organize and formulate ideas at some convenient time that will not interfere with the program but be of great help to us all.

#### VETERINARY COLLEGES SHOULD ASSIST

I believe that food hygiene should be enhanced in our veterinary colleges. Give the students actual practice. By so doing they will be more proficient in giving valuable service in any community in which they happen to locate, thereby increasing their yearly income. Give the young graduates a chance and they will make good. I have met many graduates and they are absolutely ignorant as far as the duties of municipal inspectors are concerned, especially the legal part. There is no use in a veterinarian securing a position if he is going to be a bungler or a blunderer.

I also think this subject should find its place on the programs of the meetings of our various veterinary organizations, and all of the same should become active and push this subject to the

limit. Get into the headlines of the press, just as the New York State Veterinary Medical Society did this year, at its annual meeting. The following is a resolution it passed:

*INASMUCH*, As there is need of greater knowledge in regard to public health requirements, and as the veterinarian, by virtue of his education and training, is qualified to impart such knowledge, and as the funds of this Society are in a condition to finance such a campaign of education and propaganda; be it therefore.

*Resolved*, That the Society authorize the president to appoint, from time to time, such a representative as may seem desirable to appear before different public organizations in the State, to solicit their cooperation in furthering the health interests of the State and show wherein the veterinarian can help in this work; and be it further

*Resolved*, That the expenses of such representative shall be paid by the treasurer upon the approval of the bill by the president of the Society.

I think our veterinary journals should emphasize the need of veterinarians in public health work. It naturally would give food for thought. I also think that more of our profession should become associated with the American Public Health Association. A membership would carry with it the journal of the Association, published monthly and thoroughly up to date. From the benefits I have received from such membership, I would certainly recommend such action as being good business.

I can not close this paper without expressing my appreciation for the cooperation I have received from the health officer, Dr. Hugh H. Shaw, of my city, who has made it possible for me to carry out a successful undertaking in regard to playing an important part in our public-health activities.

#### DISCUSSION

**DR. H. C. GIVENS:** Recently I appeared before a board of supervisors in Virginia, for the purpose of having them adopt the area plan of eradicating tuberculosis from their county. After due explanation and discussion of the matter with them, one of the members of the board turned on me and said, "Doctor, I think your plan is just about as practical as an ox-cart would be out here on this National Highway at five o'clock on Sunday afternoon." I feel just about as much out of place here this morning as I did on that occasion.

I appreciate very much the privilege and honor of appearing on this program. However, it is beyond my ability to advance any theories which might revolutionize the present methods of meat and milk inspection. I am glad to say that we have had the pleasure of listening to some wonderful papers here this morning and the men who presented them are to be complimented, for they have certainly had the experience. The first of July I completed six years as an inspector of meat and milk for a city, and I can sympathize with others serving in a similar capacity and understand and appreciate that they have some wonderful ideas.

The thing that has occurred to me this morning is: What is the purpose of this program? Is it that we, as veterinarians, are afraid of getting a bottle of sour milk or a piece of bad meat? I say it is not, but the program has been arranged because we, as veterinarians, are here for the information we may get on this subject to help us earn our bread and meat.

As you all know, the majority of the meat supply of the country is under federal inspection. Dr. King has outlined the matter very nicely and it seems that he has met with a considerable measure of success. Education and cooperation with the municipal inspector in this age is, I think, the best plan. The



day of policing is over. In this age of scientific advancement we can not possibly hope to get anywhere unless we can educate the public and I think this is the only way that we will ever meet the need of sanitation of meat and milk products in this country.

Never before in the history of the country has there been so much said about sanitary control, as there has been within the milk industry itself in the past few years. Education of the men at the head of the industry has gotten results that never could have been obtained otherwise. The producer and distributor of milk must be educated and at least brought to see that if his milk is good, the sale of one bottle would sell another. It is to his advantage.

DR. C. E. COTTON: This subject has been very generally covered. Some of the speakers stated that we have all been lax in our duties along this line. One reason for this is the fact that veterinarians, particularly those engaged in control work, have been forcibly made to believe that our activities should be limited to the protection of the health of animals and we have been taught to keep our hands off of the milk side of the question. We have health officers engaged in control work throughout the United States, some of whom have been furnished by the U. S. Public Health and Marine Hospital Service, and we have been lead to believe by these medical officers that it is none of our business and to keep our hands off. It has been my privilege to discuss this question for a number of years with medical officers and civic bodies. I have in mind one instance in which a medical officer, who was furnished by the Public Health Service to one of our larger cities as health commissioner, at one of the public meetings relative to the proper requirements for wholesome milk, stated that he would prefer to use and recommend pasteurized milk that contained one million bacteria before pasteurization than to recommend and use the raw milk that contained one thousand bacteria per cubic centimeter, even though it was derived from cattle that had passed satisfactory tuberculin tests. I replied that in my opinion he was recommending the use of "cooked cow manure" in preference to a wholesome, safe milk, provided the same was properly cooled and bottled immediately after milking.

The state departments of Minnesota, seven years ago, prepared an ordinance which they recommend for cities other than the first class to adopt, in order to protect the milk supply in their municipalities; in the neighborhood of 112 cities and villages have adopted ordinances conforming to the proposed ordinance, insofar as their local conditions will permit. These ordinances require that the city milk inspector shall be a qualified, licensed veterinarian. We succeeded in having this requirement adopted by using the argument that in the majority of cases the milk inspector selected would be a local man or woman with no special qualifications, but who would be appointed through political preferment, and that a veterinarian could, after a few days' laboratory training, qualify for the dairy inspection service, and with his professional qualifications be in better position to render efficient service.

Now the U. S. Public Health Service has prepared a model ordinance and it is endeavoring to have all municipalities throughout the United States adopt it. The proposed ordinance we have prepared in Minnesota is somewhat similar to the one recommended by the Public Health Service. However, there is one section in the federal ordinance that requires that there shall be the annual tuberculin tests of the cattle, but it does not require that the dairy inspector shall be a licensed veterinarian.

The health officer of the city of Rochester, Minnesota, which city is the only one in Minnesota that has adopted the ordinance recommended by the Public Health Service, read a paper at the annual meeting of the Minnesota State Veterinary Medical Association last winter, with particular reference to the work in his city. In the general discussion that followed the reading of his paper he stated that their dairy inspector was a woman, who had no special training or education for the work, and that the examination of the dairy cows should be made only by veterinarians. After the discussion a resolution was adopted by the Association and forwarded to Dr. H. S. Cummings, of the Public Health and Marine Hospital Service. This resolution recommended that the city ordinances enacted to preserve the public health, and which provide for the inspection of milk and milk food-products shall require the inspection of dairies and dairy cattle to be made only by a duly qualified and

competent veterinarian: and further, that the Public Health and Marine Hospital be respectfully requested to consider amending their milk ordinance to require that the inspection of the dairy cattle be made by competent, qualified veterinarians.

Our Secretary received a letter from Dr. W. Grubbs, Acting Surgeon General, in which he invited attention to the section in the standard ordinance that requires that "the physical examination and tuberculin test of all cows shall be made before any milk therefrom is sold, and at least every twelve months thereafter, by a veterinarian approved by the health officer." He further stated that in his opinion the requirements that dairies can be inspected only by veterinarians would not be justified inasmuch as the inspection of dairies is not believed to require the training of a veterinarian, and health officers have found that graduates in dairying make just as good dairy inspectors as graduates of veterinary medicine. He stated, however, that if any city considers it advisable to make the requirement, that it would not result in the ordinance not being considered standard by the Public Health Service.

DR. E. D. KING, JR.: I would like to ask Dr. Cotton what a model milk ordinance is.

DR. COTTON: I am pleased that Dr. King has asked this question. I should not have used the word "model" as applied to the ordinance. I realize fully that there is no such thing as a model milk ordinance, and the word "proposed" should be used rather than the word "model." A model ordinance on this question would of necessity have to contain requirements that would be impracticable to apply to the local conditions in the dairies at the present time. However, I believe that all proposed ordinances recommended by authorities should include provisions that, particularly when the work is initiated, may not be complied with literally, but it should be our aim to dictate and encourage dairymen to make the necessary changes to comply with the ordinance in order to protect the human family and succeed in furnishing a wholesome milk supply. We may not be able to live up to the ordinance at first, but conditions can gradually be changed and bettered by encouraging them to comply with the ordinance.

DR. J. A. KIERNAN: I think the officers of this section showed excellent judgment in arranging this morning's program. They showed great foresight in placing upon the program subjects which have brought forth a discussion of a broader field for the activities of veterinarians. The speakers have pointed out a number of activities in which the veterinarian should be more generally employed than he is at the present time. The subject of municipal meat inspection is one that should be strongly endorsed by this Association, and every effort should be put forth to assist municipalities in the inauguration of this much-needed supervision of the meat food-supply killed locally. It is a work that essentially belongs to those who, by training and practice, have made themselves specialists in this line of work. We should not relax our efforts in the endeavor to improve supervision over meat inspection and milk hygiene until every city and town in the country is supplied with competent veterinarians who will help safeguard the general public from diseased meat and milk, and deleterious food supplies in general.

This Association has, at its annual meetings from year to year, blazed the way for campaigns, having in view the control and suppression of live stock diseases. A number of years ago a great deal of time was taken up by the discussion of glanders and, as a consequence of the efforts put forth by the veterinary profession in general, this highly infectious disease was suppressed in many localities, and reduced elsewhere, so that it is now no longer the menace it was a few decades ago. The Association has given much time in years gone by to discussing the subject of Texas fever, and the eradication of the splenic fever tick. Following these subjects the programs have been replete with discussions on tuberculosis, foot-and-mouth disease, abortion, and other timely subjects. As these matters are attended to, the officers of the Association are permitted to look into the future for other fields for utilizing the services of the nation's veterinary personnel. We have a large veterinary group in this country that is capable of rendering, and has rendered, most valuable service to the live stock industry and to the public at large, not only in the every-day treatment of animals afflicted with disease, but in conquering

insidious and spectacular infectious diseases, which unless checked will cause tremendous economic losses to the nation.

For several years we have heard much about the lack of veterinary students in our colleges. I think there is more ground for apprehension today, however, than ten years ago, for at that time there was a surplus of veterinarians; whereas today there seems to be about an equal supply for the demand for the services of veterinarians. It is a certain fact that the inexorable law of supply and demand applies just as rigidly to the veterinary profession as to any other group in society, or to a commodity of any kind. It appears to the speaker that it might be to the best interests of the profession to have a little greater demand than can be met with the available supply of veterinarians. Would not such a condition bring about a greater demand for their services and a little higher recognition of the value of such services?

While we have passed through a period of depression and some distress, there now appears on the horizon a slight hint of silver lining that promises a better era for our profession in the future. We must take advantage of the opportunities that are presented in such outlines that have been given here this morning, and fill these positions with such creditability that it will create a demand for more service of the same kind. By fulfilling these responsibilities with credit we will be pointing out the necessity for the services of veterinarians and their indispensability to the great live stock industry of our nation.

DR. GIVENS: There is one point that I would like to emphasize at this time. It has been touched upon slightly. I do not know what colleges are doing to train men to fill these positions. Today I heard it said here that they are laying stress on these courses and I am glad if they are. They certainly did not teach very much milk and meat inspection when I was in school and I assure you that any man who has attained any measure of success in this field up to this time has done so by his own efforts and ability. My earnest advice to any man leaving college today, who intends to start on a career of municipal inspection, is to take a postgraduate course by spending not less than a year with some man who has the responsibility of a large municipal inspection, after which he will find his undertaking much easier.

It has been demonstrated repeatedly, to the satisfaction of all concerned, that veterinarians are the proper men to handle glanders in animals, tuberculin-testing, etc. Now it is up to them to demonstrate to the public that they are the proper ones to do municipal inspection. I recently vacated a position of this kind which I had held for six years. When this vacancy occurred there were not less than a dozen veterinarians who made application for the place and not one of them had had any real experience that covered the entire field. The result was that a graduate in agriculture, who had the experience, made application and got the position. I want to say again that veterinarians are the logical men to do this work and they must prepare themselves for it. When they have demonstrated to the public that they are the logical men to do this work they will do it and not before.

DR. J. V. KNAPP: We have a problem in Florida that I would like to present to you for your comments. In Florida we have a very small number of dairy cattle and for that reason we are obliged to import a large amount of our milk supply. We import this from as many as fifteen different states. The milk is pasteurized before it leaves the state from which it is being shipped and then we have to pasteurize it again. In Florida we have one of the best pasteurization plants in the United States. This has been completed within the last year. This milk that comes in from other states has to be mixed with 50 per cent of our own milk. Thus we have in Florida a large supply of milk that has been pasteurized twice. This is the kind of a problem that we have before us in Florida. We are anxious to have a pure supply of milk. I would like to hear what some of you think about it.

DR. W. G. HOLLINGWORTH: With regard to Dr. Cotton's remarks I want to say that only a very few cities in the United States are equipped with a bureau of food hygiene in charge of a veterinarian. For fifteen years I tried to get the health officials of our city interested in the fact that the veterinarian is the proper man to take care of this work and I failed just as many times. I made one noon address before our Kiwanis Club. That was all that was necessary for the goal to be reached. Now I want to say in connection with public

health service that you must educate the public and get them interested in this work and the rest will come. Any city can have as efficient a health service as it sees fit. All that is necessary is for those in power to place sufficient funds at the health officer's disposal and he, with a perfect personnel, will give results. As public health is purchasable, within natural limitations, any community can determine its own health rate.

DR. W. E. COTTON: Since the question of pasteurization has been mentioned in connection with dairy inspection and pure milk, I would like to say that I am a firm believer in pasteurization; not as a means of making unclean milk salable, nor to encourage lack of care or cleanliness but because I believe it to be a necessary public health measure. Even with all the care that can be economically exercised, it is not possible always to render raw milk safe. Freeing the herds from tuberculosis will eliminate bovine tubercle bacilli from the milk but it will not insure, nor will the most careful inspection and care that can be reasonably exercised, insure that the milk will always be free from other harmful germs, such as those of typhoid fever, diphtheria, streptococcal sore throat, etc., to say nothing of those that cause severe intestinal disturbances in young children.

I believe that no good can come from opposing pasteurization. It is here with us and likely to stay until something better is found. Most of the larger cities require it, except for certified milk; the smaller ones are falling in line and a movement has been started to give small towns and rural communities the advantage of this means of guarding public health.

The veterinarian has an important public health function in helping to keep the milk supply safe. He can best perform this function by doing all he can to insure that the milk supply comes from healthy cows fed only wholesome food and kept under sanitary conditions. Then let him admit that he can not, nor can anyone else, reasonably be expected to insure that the milk does not contain harmful germs, and let him recommend that it be properly pasteurized to make it certainly safe.

Dr. Knapp has an unusual problem on his hands. The milk situation in Florida ought to stimulate local production. I never thought of milk being shipped, as I understand Dr. Knapp to say it was, from Wisconsin to Florida. I have had no experience with a second pasteurization but I feel that I would want to have any fluid milk that had come so far thoroughly heated before it was used.

DR. L. A. KLEIN: I came into this section late and therefore I did not hear any of the papers. In regard to Dr. Knapp's problem, I would suggest that a requirement be made that milk must be delivered to the consumer within a certain period of time after pasteurization. I do not believe that I would want to use milk that had been pasteurized fifteen days before it was delivered, even if it was mixed with fresh milk. (Applause)

## IODIN FROM MARINE PLANTS

The iodine that is found in certain marine plants is 200 times as effective as inorganic iodides, in its power to bring the thyroid gland back to normal. Dr. J. W. Turrentine, of the U. S. Bureau of Soils, who told of his researches at the meeting of the American Chemical Society, reported in *Science*, said that small doses of iodine-bearing substances coming from seaweed cured simple goitre. The symptoms of iodism that often result from using inorganic iodides were lacking and there were no disturbances such as result from taking thyroid gland preparations. It appears that the iodine is present in a colloidal form in the marine plants and is absorbed very slowly by the digestive tract. This lessens the chance of over-dosing.



## THE DEVELOPMENT OF MEAT INSPECTION IN CALIFORNIA\*

By GEORGE GORDON, *Chief*

*Bureau of Meat Inspection, California Department of Agriculture,  
Sacramento, Cal.*

The subject on which I have been slated to address you this morning is one that for many years has been close to my heart.

Some of you may recall a meeting of this association, some fifteen or sixteen years ago, long before meat inspection had been thought of by the politicians who later gave the law to California, when my enthusiasm on the subject bubbled over in a paper I was privileged to read before you. And, now, when the uncertain hopes of that time are well on the way to become a reality, it is sometimes difficult to think or talk of anything else.

You, of course, have read the ancient history of this subject in your text-books on meat inspection, and it is needless for me to do more than state that we are not discussing a new subject but merely turning the page to another chapter of an old, old story. If I were chosen to select a title for the story from its earliest history to the present time I should be inclined to say: "Myths and Mysteries of Meat Inspection."

Its origin had apparently been forgotten when history began, but its story has come down through the ages to explain certain practices of religious leaders recorded in history. And the methods they used, as well as their reasons for what they did, were known only to those leaders and remained mysteries to the rank and file of the people.

Even of late years, while the subject has grown to be less of a myth, it has continued to be a mystery to many. Its value to the human race has never been fully realized, especially in this country where meat inspection was never considered at all until the packers felt a pinch on their pocket-books, when their products were barred from European markets. They hastened then to "the powers that be" at Washington to demand a system of meat inspection that should reopen to them such markets, and it was granted solely to relieve this pinch on their pocket-books and not at all out of consideration for public health. Even now the federal law will not allow federal inspection to be given to a

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plant that does a purely local business, but only to shippers, either export or interstate, and the question of public health in our own nation has only lately begun to be in any way considered as an important factor, although the system has been in operation for approximately thirty-seven years.

I have even considerable doubt in my mind as to whether Senator Ben Bush, when he presented to the legislature of 1921 the bill now known as the California State Meat Inspection Law, had more than a vague realization of the far-reaching benefits of his action. "He builded better than he knew."

When this law finally went into effect it was placed in the hands of the State Department of Agriculture for enforcement and while the technic of meat inspection had been thoroughly worked out by the federal authorities and served as our guide on the floor without any change whatever, there was no precedent to guide us in working out the details of enforcement. In that we were treading, as it were, on virgin soil, and had to devise our own ways to solve the problems that faced us.

#### CAMPAIGN OF EDUCATION

Our first act was to feel our way among the slaughterers to see how this law was going to be accepted, and to lay the foundation for a campaign of education, not only among the slaughterers but the general public also, and much time and thought was needed to make the pattern from which to mould public sentiment. Consequently it was some time before any effort was made to begin actual practical work to any great extent.

Observations made in various parts of the State showed that the conditions to be contended with were about the same everywhere, and proved that we should have to build our own future structure without help or guidance. I am pleased to state that never have I worked with a class of men who as a whole entered more completely into the spirit of development and cooperation than have the slaughterers of California. The proof of this may be found in the present conditions throughout the State, as contrasted with what were found on our preliminary survey, more than \$3,500,000 having been already expended in improvements, and much other construction work being now under way.

Our first step was to convince the slaughterers that we wished to work no unnecessary hardship on them, and they soon learned to believe that fact. We tried to give each one a vivid mental picture of the need for better sanitary conditions, and they all

seemed very soon to realize that their slaughter-houses were built, as a rule, in a slovenly way. Most of them saw quickly that their methods of disposition of sewage and other waste products were ineffective and wasteful, and to remedy this condition has been one of our principal aims in all the plants we have so far been able to reach. Newer and better methods have been worked out and are rapidly being put into practice in all plants, whether they have inspection or not. Instead of running sewage and other waste matter directly into sloughs and public streams, thereby contaminating waters that later in the course of their natural flow would supply drink to live stock, we are now installing catch-basins, grease-traps and septic tanks for the disposition of sewage. Paunch contents and other waste matter are never allowed to accumulate, and instead of allowing hogs to run conveniently close to the slaughter-house to feed on the raw offal, we now insist on all hog-pens being not less than 100 feet from the plant, and proper equipment must be installed so that offal may be cooked before being used for feeding purposes. This alone has made a decided difference in the sanitary surroundings of the rural slaughter-house, and many of the slaughterers have been amazed at the money value of the tallow, fertilizer, and other products that they had previously allowed to run off in the stream or to be buried in pits or wherever it was most convenient to dispose of it otherwise.

#### SCREEN-ROOMS ELIMINATED

Another important change in the old methods is the elimination of the screen-room used for hanging the meat. These veritable fly-traps are rapidly being replaced by dark rooms with ventilators close to the floor and in the ceiling and roof. In this way the animal heat is carried off more satisfactorily and the fly has less desire to spend his vacation in such a room. This method is especially desirable where no refrigeration is maintained.

Every possible assistance has been rendered the slaughterer where it was necessary for him either to remodel old buildings or to construct new plants, by the drawing of special plans and specifications to suit each one's need without charge. This is the first item of money-saving aid which is noted by the slaughterer. While it has taken long tedious hours of tireless effort to render this part of the service, it has been well repaid; but it should be understood that this is not a requirement of the meat-inspection law. The service was started because of the fact that

there were no architects available who understood the slaughterers' problems and could specialize in this line of work. We had to consider the fact that we were dealing with a class of people who were not overburdened with wealth. We had to take our improvements as gradually as might be; a very different situation from that of the big packing-plant that contemplates federal inspection, where the requirements have only to be stated and crews of men are immediately at work under the direction of the plant's salaried architect, and the cost sets no limit on the possibilities.

So much for the initial problems. Now for the actual work. A few individual slaughterers applied for inspection, which was duly inaugurated. The matter is entirely optional, and may not be forced upon any one. Presently the idea of this protection began gradually to enter the minds of whole communities. A number of ordinances prohibiting the sale of uninspected meat were passed according to the inexperienced ideas of individual city attorneys, which did not in every case prove entirely satisfactory, until finally from all these ideas and mistakes was evolved the present simple form which is recommended by the department and is readily accepted wherever there is a desire for state meat inspection.

#### VETERINARIAN IN CHARGE OF EACH PLANT

On the passage of an ordinance of this nature every slaughterer who desires to operate under its jurisdiction must make application to the Department of Agriculture for inspection, accompanying the same with a certified check to cover three months in advance for whatever proportion of time he requires. A representative from the office then visits his plant and gives detailed instruction as to what is required before inspection can be inaugurated. After the slaughter-houses are all satisfactory and the ordinance goes into effect, a veterinarian who has in some way become familiar with our methods is placed in charge of each plant.

At first nearly all our inspectors were trained at federal plants through the courtesy of Dr. Mohler, who instructed his inspectors-in-charge at all his California plants to render us this service. In this way we were able to benefit from the capable men of the federal service who are trained in the postmortem system evolved by long experience and thoroughly proven to be effective. Many of our men, too, were men who had already had experience in the

federal service, so that we have been able in this way to establish our system along their lines. We now have a training school of our own, under Dr. M. E. Anderson, a former federal employe. He is stationed in Modesto, where five plants are in operation under state inspection and supply the class-rooms for his work of preparing new inspectors to work along uniform methods. When an inspector is ready to be placed in charge of a plant, Doctor Anderson's colleague, Dr. G. E. Reiner, accompanies him to his new charge and remains with him long enough to be sure he understands thoroughly and is carrying out his instructions.

#### THE FARMER BECOMING INTERESTED

The results of our efforts along this line gave assurance that the department is doing its utmost to give California a genuine system of meat inspection. Experience has shown that the effect of inspection has increased the enthusiasm of the slaughterers for the service, since in every case, so far as we know, the volume of their business has increased far more than enough to pay the extra cost. This is due to the new confidence of the people that there is a real effort made to serve them with the best, for it is well understood that prior to inspection such was not always the case.

The farmer, too, is gradually becoming interested in the result of our effort, although he did not often welcome inspection when first inaugurated in any community where he offered his live stock for sale to the slaughterer. His strong tendency was to feel that it was another cooperative effort of the slaughterer and the veterinarian to get the better of him. This was especially his feeling when his animals were bought subject to inspection and then chanced to be condemned. Our inspectors, who, you all understand, are veterinarians, are instructed to call in the owner of such animals whenever possible and show him the reason for condemnation. Gradually as the farmers repeatedly saw conditions that warranted condemnation, they began to believe that the veterinarian really knew something that they did not, and we have been informed many times of cases where farmers have sought the advice of practicing veterinarians in order to guard their live stock against the repetition of disastrous conditions. In this we feel that we are doing our duty to our professional brethren by training the farmer to realize their value. My personal opinion is that the farmer is a pretty good loser as a general rule if any effort is made to educate him along this line.

As far as the public is concerned I can say without hesitation that the people of this great state are alive to the need for just such service as we are rendering. And the number of plants operating under our supervision, which is at present 95, and the number of retail markets selling state-inspected meat, which is today over 5000, is the strongest argument I can offer to show that the people are demanding standardization in meat and meat food-products as well as standardization in other lines. Within thirty days from this date we shall have reached the 100 mark, and I feel safe in predicting that before you have another meeting here we shall have 150 plants operating under state supervision, for the growth of this work appears to be governed by the law of falling bodies in its sure gathering of speed and momentum. •

#### COORDINATION OF EFFORT NEEDED

And before I close I would like to emphasize here one thing I have mentioned on other occasions, for it seems to me of vital importance, and that is the need of cooperation in the general scheme of protection to public health. We need coordination of effort, by public health organizations, by boards of health, by all public officials, and by individuals. There is room for all in this work if all will work shoulder to shoulder for the general welfare. There is no room for the selfishness that can so easily crop up in public service of this kind. And when the advocates of one system allow their actions to be influenced by a jealous opposition to other beneficial systems, they are working untold injury, not merely to what they would oppose, but to their own system as well, and to the work as a whole.

Here is one of the finest opportunities I can imagine for veterinarians to stand in a body behind the idea of meat inspection. Not state meat inspection nor federal meat inspection, nor municipal meat inspection, but the principle of meat inspection as exemplified in any system where veterinarians are used. And while at present the positions are not as remunerative as they might be, I believe the future holds great possibilities, especially if members of the profession, whether in this service or in private practice, will help us to show to the people that their technical training makes them the logical men for this work.

New plants are applying for inspection constantly and we are always looking for new material to carry along our program of development.



## **EFFORTS TO PREVENT THE SPREAD OF INFECTIOUS BOVINE ABORTION BY APPLICATION OF SEROLOGICAL TESTS TO IMPORTATIONS OF BREEDING AND DAIRY ANIMALS\***

*By JOE H. BUX, State Veterinarian,  
Little Rock, Ark.*

A very small percentage, probably much less than one, of infectious bovine abortion is prevalent in Arkansas. It is confined to isolated pure-bred herds and groups of dairy herds of improved breeding quality in certain restricted localities. It is very rarely encountered in strictly common native herds. Its low incidence is undoubtedly due to the small number of importations of breeding and dairy cattle in past years, because of the extensive losses of such importations from Texas fever.

The advisability of requiring the application of a serological test to all importations of breeding and dairy cattle was first considered several years ago, but was not established because of the somewhat conflicting opinions of the various authorities regarding the reliability of the tests.

The promulgation of a regulation requiring the application of the agglutination or complement-fixation test to all breeding and dairy cattle in excess of six months of age, by Georgia, in January, 1924, followed later by South Carolina, induced a reconsideration of this matter in 1925. Inquiry disclosed more uniformly favorable reports of the reliability of the serological tests in detecting affected animals; none, however, reported the tests as one hundred per cent efficient.

Therefore, as a trial, it was decided to require the application of the agglutination or complement-fixation test for infectious bovine abortion to all importations of dairy and breeding cattle in excess of six months of age, for the purpose of endeavoring to prevent the concentration of the disease from increasing in Arkansas. It was anticipated that information might be adduced later, showing the necessity of requiring a serological test on breeding or dairy cattle moving intrastate or requiring the application of such measures for the control or eradication of the disease as may be available or advisable, and sentiment may demand or permit.

\*Presented at the sixty-third annual meeting of the American Veterinary Medical Association, Lexington, Kentucky, August 17-20, 1926.

It was hoped also that such a regulation might have a far-reaching educational effect in inducing cattle-owners in the badly infected districts to employ the known remedial measures, so as to reduce the ravages of the disease to a minimum, and perhaps stimulate further beneficial research work.

Serological tests on all importations of breeding and dairy cattle have been required since July 1, 1925. It is proposed to re-test many herds containing importations of tested animals, for the purpose of determining whether infected animals are being passed on test and, if so, the percentage. One Mississippi breeder, marketing many breeding animals in Arkansas, has had the test applied to his entire herd because of the Arkansas requirement. It has developed that the highest results in the application of the test will not be attained without some standardization of the technic.

There is no opposition to the test within the State and it is the plan to continue the requirement of the serological tests unless evidence is adduced disclosing that they do not prevent the introduction of diseased animals. No regulations have been promulgated regarding intrastate movement of animals or for the control or eradication of the disease from infected areas voluntarily. However, some owners of infected herds are submitting them to treatment under veterinary supervision and inaugurating sanitary measures.

Corroborative of the trend of the opinion of known authorities is quoted the following from the report of the Committee on Bovine Infectious Abortion of the U. S. Live Stock Sanitary Association, unanimously adopted by the Association in December, 1925:

We desire to emphasize that the sera reactions for bovine infectious abortion are reliable. True they do have certain weaknesses but that can be said about any biological test. The greater extent to which they are being used by practitioners, as pointed out by your committee last year, is an indication of their worth, and also the breeders appreciate their value and are requesting that their herds be tested. That the live stock sanitary authorities of each state study the situation in respect to this disease in their particular commonwealths, and initiate such control measures as they consider advisable and further that such authorities be prepared to report to this Association next year the progress which has been made.

It is readily conceded that Arkansas has no concrete evidence of progress to report. It is desired to have it distinctly understood that the present efforts are merely initial to what is confidently expected to lead to a fixed program for the complete eradication of infectious bovine abortion, based upon the results

of present and future measures and information adduced both within the State and by the sanitary officials and research workers of the other states.

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### COMING IOWA MEETING

The Iowa Veterinary Medical Association will meet at the Hotel Savery, Des Moines, January 18-19-20, 1927, and the clinic will follow at Ames, on the 21st. A splendid program has been secured. Dr. T. A. Sigler, president of the A. V. M. A., will be present and will discuss some horse problems; Dr. C. H. Case, of Akron, Ohio, will handle dairy cattle practice; Dr. E. L. Quitman, of Chicago, will discuss small animal therapeutics; Dr. M. P. Ravenel, of the University of Missouri, will speak on tuberculosis; Dr. Sivert Erickson, of Kansas City, will present some recent developments in poultry practice and Dr. J. W. Benner, of Cornell University, will discuss bacterial infections of swine and their relation to hog cholera vaccination.

From within the State, Dr. T. G. Fultz, of Pella, will discuss field observations on swine diseases; Dr. J. C. Glenn, of Norway, will take up post-vaccination troubles in immunizing against hog cholera; Dr. Henry Hell will give his ideas on business methods in practice; Dr. H. A. Bell will present short-cuts in practice; Dr. H. H. Dukes will present the physiology of rumination. Dr. C. H. Covault will give a report on immunization of suckling pigs; Dr. G. W. McNutt will discuss the corpus luteum of the cow; Dr. W. C. Stewart will take up cooperative agencies in county area tuberculosis eradication work and Dr. H. N. Strader will discuss some field problems in tuberculosis eradication.

The clinic will be put on by Drs. Erickson, Case, Quitman and Sigler. Dr. H. E. Bemis will also demonstrate the new wire saw, used in obstetrics, and intraspinal nerve-blocking, demonstrated by Dr. Franz Benesch at the Lexington meeting of the A. V. M. A.

A banquet will be served the night of the 19th to which the members of the Iowa Legislature, live stock breeders and other guests will be invited. An interesting and highly entertaining program will follow the banquet, which is intended to create good will and a better understanding of the profession.

A wonderful meeting full of good things for everybody is assured by Secretary Steel.

## ABORTION VACCINE AN IMPORTANT FACTOR IN THE ECONOMIC CONTROL OF ABORTION DISEASE\*

By GEORGE E. CORWIN, *Hartford, Connecticut*

*Deputy Commissioner on Domestic Animals*

In presenting the subject assigned to me and before entering into the subject itself, as to the value of biological products in the control of abortion disease, I shall review briefly, as a matter of introduction, some of the logical factors which are to me significant in the control of the disease by vaccination. The phases which I shall now allude to are, namely: The nature of abortion disease and its causes, its classification, diagnosis, and sequels.

First, modern methods in the control of certain infectious diseases are fast replacing or supplementing older control theories and practices. Yet we must not lose sight of or neglect to apply scientific principles in each and every case.

Hygienic principles apply mostly where the control and reduction of infectious agents are desired. Nevertheless, these principles and practices used alone under certain conditions will not or cannot take the place of immunity. The assurance, if immunity can be established, is much greater in the protection against outbreaks or the introduction of specific infectious diseases, than all the principles of sanitary hygiene that can be applied. Natural immunity is a staid condition, and where acquired immunity can be established in certain diseases, this may be permanent.

No absolute dependence can be placed upon the prevention of disease by sanitary hygienic measures at this time, due to intensified dairying, stock-breeding, and the great interchange and traffic of cattle, so long as susceptible animals exist. I, therefore, believe that when it can be established that protection and immunity can be introduced into the animal body by artificial immunization, that such a method is far superior and more satisfactory and affords more protection than any other means.

Infectious abortion is a disease which to me appears to stand alone, insofar as its nature and classification are concerned. Yet it has been proved beyond doubt that it is an infectious disease and can be introduced experimentally and is caused by a specific micro-organism.

\*Presented at the sixty-third annual meeting of the American Veterinary Medical Association, Lexington, Kentucky, August 17-20, 1926.

While laboratory workers find other forms of organisms associated with the *Bacillus abortus* of Bang, yet I think it might be said that, in most instances, this mixed infection is found after abortion has taken place, or when the material examined has been more or less exposed to the organisms which are constantly found in nature, and again, for instance, when the diseased lesions are present in the pregnant uterus and mixed infection takes place.

It is also apparently somewhat different from other infectious diseases, for the reason that it is not a fatal disease, yet it may be followed by complications affecting the genital tract, which may be followed by sterility or the loss of reproductive powers. Another important feature is the fact that, not being a fatal disease, the animal is given an opportunity to immunize itself and an acquired immunity is produced.

When immunity is established, the prominent symptom disappears, and the major act no longer takes place. When this acquired immunity occurs and if none of the sequels of abortion have developed to that stage or extent that they cannot be corrected, then normal pregnancy takes place, followed by normal births.

#### CAUSATIVE AGENT INHIBITED

There seems to be satisfactory evidence that when immunity to abortion disease is established in animals, the causative agent, the *Bacillus abortus* of Bang, becomes inhibited or non-pathogenic within the body of the host and can no longer produce pathological lesions in the pregnant uterus. If abortion does not take place, many of the sequels are eliminated. If the animal does not abort, the milk secretion is not interfered with, and these animals are as valuable for milk-production and procreation as are non-infected ones.

This disease is not hereditary and, to my mind, cannot be classed with other infectious diseases, such as tuberculosis or foot-and-mouth disease, for which diseases at this time no satisfactory immunization has been found, and in which direct self-immunization does not take place; nor is an acquired immunity established. Diseases such as these can at this time be controlled or eradicated only by the complete annihilation of the host, the fomite, and the organisms themselves.

Abortion cannot be classed with diseases such as anthrax, blackleg, rabies, hemorrhagic septicemia, and others, for when these diseases attack animals, death is usually the outcome



although they can all be controlled or prevented by vaccination. Therefore, to my mind, it stands alone, and in a class by itself, which is a matter of importance, when its control is considered in infected herds.

It does not seem that in dairy herds or in herds where infection is present, and where the offspring and milk are important factors, that slaughter is necessary, eliminating sterility; neither is it practical, if offspring is valuable, to destroy dams with valuable blood-lines, if normal, healthy calves can be produced and raised as such, and if the mere act can be prevented and the infection in the parent body controlled by immune bodies, regardless of positive reactions to the blood-test.

Another feature which to me seems rather peculiar and important, and one which I cannot help but mention before going further with my paper, is: Why do veterinarians, in a disease like infectious abortion, hesitate to use or recommend a vaccine product for its control when they know that an immunity is acquired and when they know that the disease will spread rapidly through a herd? They know well, if they have had any experience with it, that it cannot be controlled in commercial dairy herds and sometimes in hobby herds as well, by the elimination process, carrying out the blood-testing, isolation, disposition, and sanitary hygienic measures, as an operation. American veterinarians seem to have been backward in giving the vaccine treatment a trial, and have allowed herds under their control to become complete economic and breeding losses.

#### EXPERIMENTS OF BANG

The records show that years ago Bang and other European authorities successfully vaccinated cattle with the living organisms. For instance, Bang long ago proved that the injection of living abortion bacilli, one or two months prior to coitus, was well tolerated, and that abortion was almost entirely eliminated, after vaccination in badly infected herds.

Perhaps confusing reports and the great diversion of opinions of our American authorities have had a great deal to do with influencing the practitioners against its use. Fear of spreading the disease by vaccination has also caused some to be fearful; even fear of augmenting its spread in infected herds. Nevertheless, and for other reasons which might be given, it appears to me that when experimenting with control measures, abortion vaccine has never been given the opportunity to prove its value.

I wish now to go on and dwell a few moments on the diagnosis and its importance. I believe one of the best diagnostic signs in abortion disease is when actual abortions occur, and these actual abortions are followed by one or more of the many sequels caused by infection, such as sterility, metritis, retained placenta, cervicitis, mammitis, and many other abnormal conditions of the reproductive organs. I do not believe but that any veterinarian who has had experience with the problems of infectious abortion can help but make a correct diagnosis from the conditions such as I have mentioned, together with the appearance and condition of the calf, very abnormal condition of the cotyledons and placenta, and other unmistakable signs.

In referring to the complement-fixation test, or the agglutination test, I believe also, these are valuable at times. I believe these tests are valuable in those herds in which no actual abortions have taken place and in which the herd animals all show a negative reaction. I believe these are very useful tests as a herd index, but very unreliable when an individual of the herd is negative.

#### LACK OF CONFIDENCE IN TESTS

I do not place very much confidence in these tests when they show positive reactors or doubtful reactions, insofar as considering such positive animals to be aborters, or that the so-called negative animals to either of these tests in an infected herd will not abort. However, in doubtful herds where the history is not well known, I believe the tests should be applied and, under the conditions which I have enumerated, they will be of great benefit.

I know well that neither of these tests at times will give the information that is sought, as to whether a negative animal or positive animal will or will not abort. I believe a great many animals which show positive to the complement-fixation test, or to the agglutination test, and which are in reality not suffering with the disease, though they may previously have had it, will never abort again, are not necessarily disease spreaders, and would be valuable animals in any herd. However, I should not advise the adding of an animal which proved positive, to a known non-infected herd, or a negative herd.

The subject of abortion disease has been a very interesting subject to me for a number of years, and it appears that the control of abortion at this time should be of an entirely different

procedure when dealing with the commercial milking herd, from which the income is of great importance, than in those herds where the income or expense is of no significance; that eradication of this disease in commercial dairy herds by the methods advocated by certain agencies (referring to the blood-testing operation, destruction, sanitation and hygienic measures) is not applicable at this time in the infected, commercial dairy herds of New England, if the major act can be controlled.

I am a firm believer in the control of infectious diseases by vaccination, especially that group of infectious diseases which can be controlled by immunization methods. I do not believe that the industry can at this time stand the stress of killing valuable animals, valuable because of ancestry or because of milk production, when the act of abortion can be prevented.

#### THE COMMERCIAL DAIRY HERD

It is pretty generally understood that, in abortion disease, an acquired immunity takes place when animals have suffered or have been infected with this disease; and I believe that if an active acquired immunity takes place in a natural way, which I actually believe does, I have no fear but that an artificial, active, acquired immunity could be produced by the use of a proper vaccine, and in my mind, in the control of this disease in the commercial dairy herd, this should be the object sought.

The necessity of control, however, is pertinent, and as my remarks today on the disease are confined solely to infected dairy herds, my control measures will deal solely with this kind of a herd.

The act of abortion is the part which interests us, if it can be prevented, thus saving valuable animals, doing away with the act, and the elimination of sequels. The offspring from a reactor herd is as valuable to start a non-infected herd as calves from cows that are free.

Having been acquainted with this disease for a period of twenty-four years, I have always given it a great deal of consideration. I have noted the disasters following this disease. I have noted the lack of attention in applying remedial measures, and I have never been afraid to try or prescribe any measure which I thought would be of benefit in the control of it. I have noted that it would be impossible at times to cause any greater disaster, distress, or harm, than has already been done by the disease itself.

I also believe the causative agent in this disease is a specific bacterium. I further believe that animals will naturally become immunized and by the use of a proper biological product, in the form of an attenuated, true, viable vaccine, rather an artificial, active, acquired immunity can be established.

Great strides have been made in modern, medical science, and modern, veterinary medical science does not take any back seat in the production of all biological products for the control and eradication of, or immunization against, infectious diseases.

I believe today that seventy-five per cent of our herds in Connecticut, and no doubt as large a number of herds in other states, are exposed to the *Bacillus abortus* of Bang, or they have been through the course of the disease, and the animals and the owners of the same are suffering the sequels.

With a fair knowledge of the conditions in our state and in the dairy herds, I would, therefore, approve of any treatment which would prevent the act of abortion. I have used in my work, since my first knowledge of the disease, many different remedies. I recommended and used bacterins when they were first produced for the treatment of this disease. I welcomed the time when I thought that a proper vaccine was made, and took advantage of this form of treatment at the very first instance.

#### OBSERVATIONS ON 2000 ANIMALS

My observations with the use of vaccine have extended over a period of seven years, having knowledge of its effect during that time on approximately two thousand animals. I have been more than satisfied with the results produced with vaccination in the proper way, and in all herds in which I have used such a product, my clients have been very well satisfied, and in those herds which have been properly vaccinated, of which I have a knowledge, the results have also been very gratifying.

Of course, we hear of failures of the vaccination method, but I believe upon investigation it invariably turns out that the herd-owners in the past have been deceived and their herds have not been vaccinated at all. I mean by this that instead of using a true vaccine which contained the living, attenuated organism of Bang, that a product known as bacterin, or a suspension of dead organisms, has been used—a pseudo-vaccine.

In my mind the use of bacterins for the prevention of abortion is of absolutely no value, but when a true vaccine is used I am

quite sure, or it has been my privilege to observe, that an immunity is produced and the act of abortion does not occur.

I do not wish you to misconstrue the statement and assume that I would consider it one hundred per cent perfect, but the percentage of protection is so large, that I really believe the vaccination of cattle against abortion is as true a vaccination as can be given in any disease.

I do not believe investigators, especially laboratory workers and experimenters, have given the subject of immunity in this disease enough attention. In fact, I believe most investigators, due to lack of knowledge of the value of vaccination in abortion, discourage the use of a proper vaccine and, in fact, go so far as to make statements of which they have no knowledge.

The only means of control that are being given any great publicity are sanitary hygiene, isolation, and the disposition of the reactors to the blood-test.

In the recommendation of the disposition of reactors, especially in New England, where no regulatory rules are in effect concerning the disposition of all reactors, or positive animals, we frequently find that the owner of the positively reacting animals, many of which are very valuable, of course, disposes of them and we find them in other herds. Now it may be true that in some instances this might be controlling the disease in the herd from which these animals came, but when a number of animals are taken as positive animals from a tested herd and are dispersed into a number of other herds, it may be eradicating the disease in the first herd and spreading it to ten or more non-infected herds.

#### METHOD TO BE CONDEMNED

This form of eradication method is to be rigidly condemned. Of course, we as veterinary sanitarians must always have in mind the necessity of following proper, sanitary hygiene in the control of all contagious and infectious diseases, but in the commercial dairy herd, and in the control of a disease such as infectious abortion, unless sanitary hygiene can be rigidly and scientifically carried out, it is of no great value. I shall venture to say that the necessary, hygienic measures to control this disease in the commercial dairy herds cannot be properly applied in one per cent of such herds.

We must take further into consideration that in the commercial dairy herds the requirement is milk production, and the disposing



of valuable milk-producing cows, if eradication is to be attempted by that method, should be by destruction, isolation, or quarantine methods, which procedure at this time is absolutely a proposition which cannot be met by the average dairyman. In order to get the proper milk production and meet the economic importance, animals must be maintained, they must breed and come to the full flow of milk. Therefore, if in infected herds the act of abortion can be prevented by any means, the end in view, so far as the dairyman is concerned, has been accomplished.

In my mind the time is not right as yet, in Connecticut especially, even to consider the eradication of the disease, if we would consider it in the commercial dairy herds. In herds such as these, replacements are not reared but are purchased, and with our knowledge of the large percentage of infected animals without our boundaries, and being shipped within our boundaries each day, it would be an impossibility for the average dairyman even to try to control this disease by the elimination of valuable, reacting animals, or the purchasing of non-reacting animals.

When it is possible to prepare a proper vaccine that will immunize an animal and the disease for which the vaccine is specifically prepared will not develop this disease or cause pathogenesis to the host, then I say we have the most specific form of preventive medicine or prophylaxis known, or that can be practiced.

#### VACCINES IN OTHER DISEASES

The value of vaccines is clearly demonstrable in many of our most fatal diseases, and no one who has had experience with anthrax vaccination, blackleg vaccination, hog cholera vaccination, rabies vaccination, hemorrhagic septicemia vaccination, or the specific vaccine used in human preventive medicine, should doubt for one moment the value of prevention in infectious diseases when a proper vaccine can be prepared.

Do you believe that if it were possible and proven that tuberculosis or foot-and-mouth disease could be controlled by vaccination, providing the vaccination by a proper, attenuated vaccine not capable of producing the disease could be introduced, anyone would advocate the destruction of the animal, even though the animal's blood gave a positive reaction to the blood-test? I say no, of course not. It would not be good economics.

Abortion vaccine should always be viable when used, and should be incapable of producing the disease in the animal vaccinated

yet be capable of producing antibody formation, the greatest protection in the prevention of infectious disease.

The use of an avirulent, viable vaccine is recommended as a means of immunization against abortion, under the following conditions: in any infected herd, when it is the desire to control the disease either in non-infected animals or positive animals in the same herd; to prevent the major act; and to prevent abortion in on-coming heifers exposed to infection, the vaccination in this instance being the most useful and successful form of vaccination recorded, and is the most important time for vaccination also, when it is desired to hasten an immunity in infected animals or aborting animals.

The most reliable method of vaccination is by the use of the vaccine-only treatment. The simultaneous form of vaccination, or the so-called serum-vaccine treatment, to my mind, is not as true a form of vaccination as the single method. I would not recommend, as a procedure, the vaccination of animals by the simultaneous method after pregnancy has taken place, for it may be possible that pathological lesions did exist at the time, and if this be true I do not think any form of vaccination or immunization would correct this condition.

#### SIMULTANEOUS METHOD NOT DEPENDABLE

However, it may be true that if pregnancy has taken place and the pathological lesions are not already set up, by the use of the simultaneous vaccination, or by the use of the abortion serum alone, adequate protection would be afforded. However, this form of vaccination, for the reasons as stated, cannot be depended upon, and in using the simultaneous vaccination on pregnant animals one should be very guarded in stating what the results of such a form of vaccination might be.

In vaccinating, I should prefer the vaccinating of non-pregnant animals and those which are known to be free from sterility, or diseases of the reproductive organs which might prevent conception or normal births.

I do not consider abortion vaccine or abortion serum a remedy or a treatment for any of the sequels of abortion. but only a prophylactic treatment for the act itself.

To use the vaccine and obtain the results desired, it should be used only on non-pregnant cows, or virgin heifers. As a regular procedure the vaccination should be given at least two months prior to the time of breeding, and in the case of virgin heifers I

should prefer that a longer time between vaccination and breeding be given, preferably three or four months.

I have also always recommended the vaccination of the bull, on the grounds that bulls are found to be positive reactors to the test, and with the information that the organisms of Bang are found in certain parts of the genital tract and that they may be excreted or mixed with the seminal fluid. At least the vaccination of the bull can do no harm and may be of very great value.

Vaccination can be used with perfect safety ten days after parturition. However, I should not recommend its use then, unless the animal was in a more or less normal condition. I would lay great stress on the vaccine that is used, and nothing but an avirulent viable vaccine should be introduced.

The proper vaccination, when the essential elements are considered and the proper procedure maintained, gives the results desired. Reaction sometimes follows the use of a viable vaccine, but I have never seen any serious results from these reactions. It has not been my experience that the introduction of such a vaccine was the cause of sterility; neither has it been my experience that it has caused any udder trouble. It has appeared at times that when the vaccine was introduced into an animal which was pregnant, or which was bred too soon after the introduction of the vaccine, that there was a passive, inflammatory condition of the udder set up, but in this instance, insofar as I have been able to determine, it was nothing but a passive condition.

Knowing that the organism of Bang finds a resting-place in the functioning udder, I have never thought that, even though this be the case, it was the cause of any form of severe mastitis.

In the conclusion of my remarks I think it might be well to summarize them, in order to bring out the important features of this form of treatment.

#### CONCLUSIONS

1. The consideration of the nature of the disease, and its economic importance.
2. It is a self-limiting disease, and immunization does take place.
3. That it is better to introduce immunizing agents and hasten immunity, than to allow a natural infection to take place, thereby doing away with the sequels.

4. That an animal injected with an avirulent, viable vaccine will not become a spreader nor a permanent reactor, due to this form of vaccination.

5. That it is immaterial whether an animal be positive or negative to either of the blood-tests, if the major act does not take place, and milk production is not interfered with.

6. Abortion vaccines which conform to these requirements and will obtain the desired results are available.

7. An artificial vaccine will not cause sterility, nor disease of the functioning udder.

8. Vaccination for abortion is as true a vaccination as can be produced, and while there may be other features also, I think the ones enumerated are perhaps the most important ones to consider.

There is so much that can be said about this disease and its control, that it seems as though one could go on indefinitely with the subject, but I believe I have called to your attention some of the more important facts which I have been able to demonstrate in a practical way.

I am pleased to note the practicability of the immunization against abortion by the use of vaccine; and experimental data recently published by Dr. Theobald Smith and Dr. Ralph B. Little, of the Department of Animal Pathology of the Rockefeller Institute, clearly demonstrate that a living vaccine will protect, insofar as their experiments have gone, for at least two periods of pregnancy.

The length of time that an animal may remain immune, without being re-vaccinated, is at the present time a very important feature. In my opinion, although it cannot be clearly demonstrated, due to the lack of important data, perhaps one proper vaccination might be sufficient for all time. However, I should not now depend upon one vaccination only, where prevention was absolutely desired, but I think, in accordance with the findings of Smith and Little and with some experience which I have had along the same line, that there would be protection for at least two periods of pregnancy.

I have a record of vaccinated animals in an infected herd that have not been re-vaccinated for five years, and no abortions have occurred.

Reports and works along the line of the length of immunity, especially of artificial vaccination, will have to go on before this can be determined accurately.

I might go on for a long time, but I do not wish to tire you with this subject, but merely to call your attention to a few angles, and shall bring my remarks to a close so that you may all have time to discuss the subject as you see fit. However, I wish to call your attention to the report made by the Committee on Contagious Abortion at the 1925 meeting of the United States Live Stock Sanitary Association in Chicago. I have had the pleasure for several years of listening to the report of this committee, but up to this time no report of any value, so far as the control or eradication of the disease is concerned, has been recommended; but in the report last year, the chairman of the committee, who read this report, requested and urged that something definite be done regarding the control and eradication of this disease.

I further wish to call your brief attention to report of the Chief of the Bureau of Animal Industry, issue of September 29, 1925, especially as he refers to bovine infectious abortion. The report reads:

"The study of bovine infectious abortion was continued throughout the year. The favorable results reported last year, obtained through the use of relatively simple control measures in privately owned and maintained herds, have continued, and little doubt remains that such measures, where they can be scrupulously and unfailingly carried out, are profitable and effective. In view, however, of the insidious character and the wide prevalence of the disease and of the great difficulty of preventing and overcoming the infection, it seems that general relief from the evil will depend upon a definite means of immunizing against it, or a specific treatment for it. With this object in view, many studies and tests with abortion vaccines and bacterins were made, but they have not yielded results which can be presented at this time."

It is pleasing to me to note in this report that it is also their opinion that general relief from this disease will depend upon a definite means of immunizing against it. I believe there must be some grounds for this part of the report, clearly expressing to me the need of a specific control in commercial dairy herds and an invitation to use a proper vaccine.

#### DISCUSSION

DR. R. C. DUNN: I believe it is the privilege, if not the duty, of any state or group of state officials to prevent the introduction of any infectious or contagious disease into their state. A state regulation preventing the introduction of infectious abortion would not only prevent the introduction of



the disease into the state, but would encourage the control or eradication of the disease in herds within the state and in some of our better herds of other states.

It is interesting to know of some of the results that are being accomplished in the control and eradication of infectious abortion in individual herds, following the use of the agglutination test and the isolation or removal of the positive reactors. It is to be regretted that we do not have a standard or uniform method of technic to follow in making the agglutination test for *Brucella abortus* agglutinins. However, the agglutination test, even with its varied methods of technic, when carefully performed, has proved sufficiently accurate to detect practically all animals of a herd which are infected with *Br. abortus*. The results of the test, when run on the animals of an infected herd, would indicate the presence and the extent of the infection and be a valuable aid in determining the method of control or eradication to be followed in combating the disease.

It is true that each herd presents a little different problem. It may be advisable to adopt control measures, for a time, such as the isolation of all positive reactors or the establishment of two herds, an infected and a free herd. I believe eradication should be our aim and eradication measures adopted as soon as possible or as soon as thought profitable. It would probably be unwise to advocate the eradication of infectious abortion by enforcing sanitation and the disposal of positive reactors in all herds. However, this method may be followed profitably and with excellent results in many herds, especially when the infection has been recently introduced or when the percentage of positive reactors is low. The owner of an infected herd, in many instances, is willing to and can dispose of the majority of the positive reactors to his advantage. Many of these animals may be of inferior type—non-breeders or poor-production animals—leaving only a limited number of positive reactors which are animals of merit. In order to have the cooperation of the owner in the control or eradication of this disease, I believe that it is quite essential that the owner be fully informed as to the cause of the disease, mode of spread and sources of infection, together with control and eradication measures, and then be allowed to participate in choosing the method to follow in combating the disease.

It might be of interest to report the results obtained in the eradication of infectious abortion in one of our college herds. This herd is owned by the Animal Husbandry Department of the Agricultural and Mechanical College of Texas. The herd is made up of a number of breeds, chiefly of the beef type. *Br. abortus* infection was suspected among some of the animals of the herd after three animals aborted in 1922. In June, 1923, the herd was tested, using the agglutination test, and testing all the animals which were within breeding age. The results of the test showed eleven positive reactors and thirty-eight negative reactors. All of the positive reactors were isolated. Of the eleven positive reactors that were isolated, six were slaughtered or sold to the butchers within six months, four were disposed of within twelve months, and one within eighteen months.

In March, 1924, a second herd-test was made on seventy-six animals. The results of the test showed two positive reactors and seventy-four negative reactors. One of the positive reactors was a negative reactor in 1923. The other was a positive reactor on its first test, which was in 1924. Both of these reactors were removed from the herd and aborted following their removal.

In 1925 the third annual herd-test was made on seventy-four animals. The results of the test showed all seventy-four animals to be negative reactors.

In 1926 the fourth annual herd-test was made on fifty-eight animals. The results of the test showed all fifty-eight animals to be negative reactors.

All of the positive reactors in this herd were obtained on two tests that were made at an interval of nine months. Since the first herd-test in 1923, one calf, three cows and three bulls have been introduced into the herd after passing negative tests. Two abortions have occurred in negative reactors since 1923. These animals aborted following dipping and remained negative to the agglutination test.

We have just recently tested the animals of three herds which showed 6, 27 and 25 per cent positive reactors. The owners of these herds have decided

that they want to adopt eradication measures and eradicate the disease from their herds and eliminate the infection from their premises if possible.

Whether the infection is prevalent or limited in the herd, I believe the veterinarian in charge is doing an injustice when he recommends the use of medicinal agents, bacterins or vaccines for the control or prevention of this disease and does not inform his client of the possible or probable eradication of the disease by means of the agglutination test and the isolation or disposal of the positive reactors.

DR. H. E. WHIFFING: I would like to ask Dr. Corwin a question in connection with handling a pure-bred herd that was known to be about 40 per cent infected, according to the results of the agglutination test. How would you go about starting to clean up such a herd?

DR. CORWIN: I wish it understood that where one is desirous of maintaining a herd free from this disease it is quite necessary to apply the agglutination and complement-fixation tests and to isolate the positive animals from the negative animals. However, in the particular instance which you have cited, if it is the desire of the owner of the herds to eradicate the disease, I would recommend that after the test the positive reactors be isolated, proper sanitation procedures gone through with and the negative animals retested at intervals. If the owner desires to maintain the positive animals as another herd, they should be vaccinated in order to prevent the act of abortion.

DR. J. W. BENNER: I would like to ask Dr. Corwin a question or two. When is the bull affected? He stated that the desirable time to vaccinate the females in the herd was two or three or four months before breeding. I would like to know when the bull should be vaccinated and what is the method of standardizing the vaccine? What is the source of obtaining such a vaccine? How and in what doses is the vaccine administered and what is the method of injection?

DR. CORWIN: It is immaterial as to the time when the bull should be vaccinated, but I think it would be advisable to vaccinate him as soon as possible. Vaccination of the bull is not for the prevention of the act but may serve to produce a certain degree of immunity. In regard to the standardization of the vaccine, I believe it is more or less up to the individual manufacturer. I think you perhaps may have read the report by Dr. Schroeder, that out of a hundred samples of the abortion vaccine examined about fifty per cent of them were viable. In my particular treatment of animals with vaccine I have personally made an examination of the vaccine as to its viability. The dose of vaccine which I have been using I think is 10 cc.

A VOICE: I would like to ask Dr. Corwin what percentage of the cows that are vaccinated show infection in the milk?

DR. CORWIN: I do not know.

DR. C. E. COTTON: I would like to hear from Dr. Murphey on this matter.

DR. H. S. MURPHEY: I do not want to express myself on this subject until after I have made my report, but as long as I am on the floor I will mention one point that passed over my head. I do not understand how you could have in a virulent vaccine one that would be safe to use, one that would not produce abortion. I would like to know how abortion was prevented.

DR. CORWIN: I know that the vaccine which I use is avirulent. This vaccine can not produce the disease in bovine animals due to this fact, and when it is introduced it seems to produce a high degree of immunity and the major act is prevented and the animal protected for a length of time.

DR. COTTON: I regret that I can not help but take part in this discussion. I am very much surprised that a man employed in control work should recommend the use of vaccination to control abortion disease at this time, giving as his reason for such treatment, that it is necessary from an economic standpoint, and recommending its use when actual abortion occurs in a herd, and that results of vaccination are of economic value to the individual herds.

Dr. Corwin states that his work has covered a period of seven years, includes 2000 cattle that he has treated, and he advised me personally that these 2000 cattle represent about 20 herds.

As I remember, Sir Stewart Stockman, of England, where they have recommended and used living organisms for a good many years, stated that their

experience discloses that the use of living organisms will decrease the abortions only about 5 per cent, but that the results of their injection of this material into virgin heifers has disclosed that such animals, even though they may not abort, some three to five years afterwards, react to the blood test and are carriers of the infection, and frequently spreaders of the infection.

Dr. Corwin claims to have obtained results in the limited number of cattle that he has treated, but I am of the opinion that no matter what treatment was given to such animals, whether it be vaccines, bran, mineral foods, or anything else, the same conclusions could be drawn, as we all know that the disease in herds is self-limiting and that an animal as well as a herd will discontinue to abort after the animals have acquired an immunity as a result of the infection. We have all had sufficient experience to know that the disease will appear as a "storm," according to Dr. Williams, and after one to two years, will subside in such a herd.

I do not think that Dr. Corwin's conclusions are warranted, as a result of the work that he has performed. It is to be regretted that such a paper as this should be given publicly to our profession, particularly when it originates from a veterinarian in control work, and particularly at this time. The Committee on Abortion Disease of this Association, as well as that of the U. S. Live Stock Sanitary Association, for a number of years, did not offer or present to us anything pertaining to the control that was of practical value, until about three years ago. Since that time they have presented practical methods and we now know that, by the use of the blood tests, which are constantly becoming more standardized, the animals affected with this disease can be removed from a herd and, by practicing the necessary methods of isolation and disinfection, the disease can not only be limited but can be eliminated.

In my opinion we should not, particularly at this time, make the serious mistake of going back or returning to where we were about ten years ago.

Dr. Corwin does not advise the use of vaccines in any but the non-pregnant animals in the herd, and does not report having any blood tests of animals he vaccinated during his seven years' experience, or any bacteriological examination of the discharges after parturition in such vaccinated animals, to determine if they can be possible spreaders of the disease.

His argument for their use is to protect only the animal from the act of abortion, and the resulting sterility. I can not connect the necessity of vaccinating the bull with these statements.

Dr. Corwin refers to the work of Drs. Smith and Little, stating that they clearly demonstrated that a living vaccine will protect for at least two periods of pregnancy. Dr. Corwin fails to state that only nine animals were included in this experiment through the second pregnancy, and that 33.3 per cent of these animals eliminated *Bact. abortus* (Bang) at the termination of their first pregnancy.

In his paper the author constantly refers to "avirulent viable vaccine." It is difficult to understand exactly what the author means by the word avirulent, as he constantly refers to a vaccine that will establish the disease in the animal. So far as I know, there is only one avirulent antigenic strain which is being used experimentally in the production of vaccine, and that one has been isolated and is now being used by Dr. Huddleson of Michigan.

Finally, Dr. Corwin fails to give any data upon which his conclusions are based. If we are to believe all the Doctor tells us, this belief is based upon his statement alone, and not upon data presented. Papers of this sort should contain the actual experimental evidence, so that one would be able to judge as to the efficiency of the product used. There have been no data presented by any investigator showing that the living vaccine will effectively control the disease due to the Bang organism.

DR. CORWIN: I do not want you to misunderstand my position. I think I cited in the beginning that I approve of the eradication of the disease, but in preparing this paper I had in mind conditions in Connecticut, where we have 75 per cent infection in our herds, and where it is impossible to eradicate the disease in our commercial dairy herds by isolation and sanitary measures. I can see no harm in preventing the act of abortion by vaccination in such herds, and I consider it my duty, if I am unable to eradicate it, to control it by the very best means at hand.

## THE INHERITANCE OF COAT COLOR IN DOMESTIC LIVE STOCK\*

By W. S. ANDERSON, *Lexington, Ky.*

*Professor of Genetics, University of Kentucky.*

A writer has recently said that stock-breeding is a craft which is concerned with the maintenance of the desirable qualities of a stock, with the improvement of these qualities and with the elimination, through breeding, of qualities which are held to be undesirable, generation by generation. In any study of stock-breeding it might be borne in mind that what the breeder terms undesirable may be, for the animal, very desirable, but that man has forced his notion of the desirable upon the various breeds of live stock until he has brought them to their present state of perfection or of imperfection, according to one's viewpoint. However, it is essential for the intelligent breeder to know the manner in which desirable and undesirable qualities appear in live stock, or how they are lost in the process of breeding, or in what manner a system of breeding may modify them.

When this writer, many years ago, became interested in live stock breeding and especially interested in the improvement that breeders were trying to make in the speed of race horses, he found that much stress was being placed upon the coat color of the horses themselves. Some little work had been done on the inheritance of coat color in horses when this writer began his work. No work whatever had been done upon inheritance of coat color of saddle horses. This breed was taken for a study and the ancestry of every registered animal in the entire breed was tabulated, with reference to coat color. This study of the American saddle and show horse decides once and for all the manner in which the various shades of color are transmitted in horses. By comparing the method of inheritance of coat colors in saddle horses with the method of the other breeds of horses it was found that there is but one law for the entire genus. That what is true of the light horse is also true of the draft horse and what is true of the horse is also true of the ass.

This knowledge enabled the writer to combine the figures obtained in the different breeds of horses and the final summary of these figures gives us exactly the manner in which coat colors

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in horses are transmitted. Table I is a summary of the figures made by the various investigators into the method of the transmission of coat color in horses.

TABLE I—*The transmission of coat color*

CROSS	MATINGS	RESULT		
		COLOR	NUMBER	%
Gray x gray	65	Not gray	18	28
		Gray	47	72
Gray x not gray	967	Not gray	528	54
		Gray	439	46
Bay x bay	3,712	Chestnut	474	13
		Bay (or darker)	3,238	87
Chestnut x bay (or darker)	2,057	Chestnut	1,018	49
		Bay (or darker)	1,039	51
Chestnut x chestnut	14,115	Chestnut	14,115	100
		Not chestnut	0	0

Before going into the summary of the above table it may be well to call attention to some facts which the writer has discovered since the studies were made, which resulted in the accompanying table. The color of wild horses is dun, with a dark-brown stripe from the mane to the tail. When America was discovered there were no living horses on either the North or South American continents. There have been found in recent years the fossil remains of many different types of the prehistoric horse which had become extinct long before America was discovered.

The only wild horses are the horses found on the Mongolian deserts in northeastern Asia, which are known as the Przewalskii. We now have a number of these wild horses in captivity in our zoological gardens here in America and they are multiplying as rapidly as the directors of the gardens can provide for the produce. This horse is a small, twelve- to fourteen-hand animal, with light, flinty bone, rather heavy, drafty body and a long, coarse head. They are dark dun with the darker-brown dorsal stripe.

The Kiang—the ass that is most horselike and very slightly removed from the wild horse—is dun, with a brown dorsal stripe, but it has the light or cream-colored underline. The Persian wild ass, which is now the living representative of the ancestors of the domestic asses, is also dun, with a lighter underline and it also has the brown dorsal stripe.



Most types of zebras have the dun coat-color, with the lighter cold-white stripes running up the neck and even to the top of the erect mane.

The fact that these more primitive animals are dun and the further fact that in domestic horses, when dun animals are mated with each other, a large percentage of the offspring is dun and when other colors than dun are mated no dun ever appears, the investigator is forced to the conclusion that dun was the original color of the horse. All horses today should be dun and would be, had it not been for a series of mutations; and we can trace these mutations very accurately. Evidently the first mutant was a gray horse from dun parentage and when two gray horses are bred no dun foals result, for the apparent reason that the gray horse has lost out of his hereditary make-up the material that can produce dun. Note in the table that no dun is obtained from gray mating.

#### BAY THE SECOND MUTANT

The second mutant was bay, the bay coming from the gray, not from the dun direct. The reason, of course, that bays, when inter-bred, do not produce any grays, is because the bay does not carry in his hereditary material those qualities that can produce gray in the coat color of his offspring. Included in bay is the so-called brown and black, which is not really brown or black so much as it is a modification of the pigment which is brown. A certain shade of this brown gives us what we call our bays, while deeper shades give us our brown and still deeper shades appear to give us our blacks. Although black horses, when inter-bred, produce very few foals of a color lighter than the lightest one of the parents, this would seem to indicate that even the black shade is less strong in transmission than the bay. Even so, I am not willing to claim that the black is a mutation from the bay, but rather think that it is a more intense shading of the color material that otherwise might produce a bay.

After this there comes but one other mutation and that is the change from the bay, brown and black, to the distinct color known as chestnut. It appears that the chestnut horse has lost the ability to transmit any form of bay, gray or dun. Its hereditary equipment allows it to produce only chestnut. It is true that there are several shades of this color. Some have tried to divide these shades into seven different divisions, from the very-light chestnut to the very-dark or liver-colored chestnut, but I

doubt if it is profitable to try to map out the different shades of a coat color like chestnut. The fact, however, stands out that chestnut horses bred to chestnut horses invariably produce chestnut coat-color and the genetic reason for this is that the ancestral material which has come over to chestnut horses has, by mutation, lost the power to transmit any other coat color.

I have not tried to make a study of the behavior of white markings on the face and feet. Some of these markings seem to be dominant; others seem to be recessive. Some interesting work could be done in working out the inheritance of these white markings on horses.

There is a light type of horse that is seen in show circuits which is perfectly white with a pink skin. It has been the theory of this investigator that this white coat-color showing pink skin-color is an albino or a mutation from the chestnut color, or the last mutation possible. The late Dr. Kastle, of the Kentucky Experiment Station, had authorized the writer to procure specimens of these white horses, bring them to the Experiment Station farm and make sufficient experiments with them so that it would be determined whether the white is an albino white or whether it is a dominant white, like the white of the Leghorn chicken. That, as is well known, is a dominant white. Dr. Kastle's death prevented this from being carried out.

#### ALBINO FOAL REPORTED IN GERMANY

Recently there has been an event in Germany that has some bearing upon the problem of the albino white in horses. It is reported that from solid-colored horses in Germany, this spring, there has been dropped an albino foal. That is, a foal white in hair color and pink in skin color. Those reporting this unusual event claim for the foal that it is an albino. Of course they do not know whether it is or not and only when it is bred can that matter be determined. If it should prove to be an albino, it will be an unusual event in the animal-breeding world. This is a registered Thoroughbred foal, so it will have an authentic pedigree and it will be a living example of a mutation, but of course it remains to be seen whether its coat color is dominant or recessive.

The coat color best liked in the domestic ass is a black with white underline, but there is in Kentucky a family that has a chestnut shade. The chestnut mingled with a great deal of white is an attractive shade of coat color, and it appears to behave

as a recessive in jack-stock breeding. Of course, the breeders in striving to produce the black jack with white underline have discriminated against the white-chestnut type and the animals of this character are becoming almost extinct. But certain types of jack stock carry chestnut as a recessive and from these jacks, when mated to chestnut mares, a certain percentage of their offspring are chestnut mules. For some years the chestnut mule has been the fashionable mule in Kentucky and yet the breeders are not able to breed for chestnut coat-color in mules, due to the fact that so few jacks carry chestnut as recessive.

The further study of coat colors in domestic live stock has taught the cattle-breeder, for example, that there is no such thing as an Aberdeen Angus black or Holstein black or a Hereford red. We have in cattle black, red and fawn coat-colors, and these colors behave in the same way in transmission, no matter to what breed they belong. The black in cattle, as displayed in the Aberdeen Angus, is dominant to red or to roan and to white. Red, while recessive to the black coat-color, is dominant to the white. The roan, as exemplified most beautifully in Shorthorns, is an apparent mingling of red and white, but it is a better example of the imperfect dominance of red. The roan then is a hybrid red-white animal and when roans are inter-bred there may be one of three types of coat color resulting from the breeding. It may be a red animal, a roan animal, or it may be a white animal.

#### ANY COLOR GOOD IN A GOOD ANIMAL

Shorthorn breeders have learned that any color is good on a good animal and no longer discriminate against white Shorthorns. Not many years ago it was thought that a white Shorthorn was not nearly so valuable as one of a roan or red color. This was a false notion and many thousands of dollars were lost by the breeders selecting against the white color. Coat colors in cattle, either beef or dairy, are not so important as they are in horses. But these coat colors seem to be inherited independently of any other qualities of the animal. It is true that in some cases there may be linked with the coat color some other valuable qualities, but this is not by any means universal. There is no doubt that it may often happen that a valuable quality is linked in the same bundle of hereditary material that carries the material for coat color. But even so, the usual method is for coat color to be inherited independently of any or all other traits of the animal.

In breeding hogs, sheep and cattle, a color gives uniformity, and breeders, in striving for this uniformity, are pursuing only a natural course. In fact it is wise for them to do so, because this uniformity in one car load lot of commercial stock has its material value. Whatever will attract the attention of the buyer and put him in a buying mood is always beneficial to the man who has stock to sell. So that uniformity in color in commercial live stock is an asset and, being an asset, then it behooves the breeder to give some attention to the type of color which he has in his animals.

But the great outstanding idea in the study of coat colors is not in the coat colors themselves, however interesting they may be, but it is the fact that these superficial things are so accurately inherited from one generation to another. If this be true of the superficial, it certainly must be a fact that the important things of animal life are as rigidly inherited as is the coat color; and animal breeders are wise who take into consideration the fact that, if they are to improve their animals from one generation to another, they must do so by improving the hereditary material that makes up their live stock.

#### FOSSIL REMAINS OF PREHISTORIC HORSE

It may be well to give one other illustration of the evolution of animal life. No horses were found in America when the continent was discovered; but in recent years there have been found the fossil remains of the prehistoric horse, in the so-called Bad Lands of Wyoming, and in these fields practically all the records of the prehistoric past of the horse have been found. The American Museum of Natural History of New York has these fossils mounted and in a condition to be studied.

The ancestor of the modern horse was a small animal not much larger than the domestic rabbit; and it had five toes. Its development has been brought about in two ways. Its size has consistently increased from age to age. It has grown from an animal of a few pounds in weight up to our present-day horse, weighing a ton or over; not all types of the historic horse, however, have grown to the ton style. We have breeds such as the Shetland ponies which are only a few hundred pounds in weight when mature. It is unnecessary to mention the two principal divisions of the horse, the light and draft breeds, to show that there has in the evolution of the animal been a great variety of types, so far as mere size is concerned. No animal known to man has yielded

in fossil form the accurate history of its evolution as the horse has done.

The main features which the horse acquired in its development are its size and speed. On the other hand the horse has evolved by a systematic organic loss. The original ancestor of the horse had five toes. As it grew larger it lost one toe, leaving four. As it acquired greater size it lost another toe, leaving but three. It seemed for a long time that three toes were to be the number to go indefinitely, but this was not to be. Specimens of fossils have been found and mounted, showing the shortening of the two side toes and the enlarging of the central toe until it was large enough and strong enough to carry the entire weight of the animal. The final result is a loss by successive stages of four toes, leaving but one to function.

This is an intensely interesting fact because in the history of the horse we have combined the two methods by which the natural laws of heredity have worked to effect a change in animal form, namely a change by increase of size and a change by the loss of features. This last method of evolution, a loss of features, is exactly like the mutational changes from the dun coat-color to the chestnut and perhaps the albino.

### HEAVY CATTLE SLAUGHTER

Cattle slaughter under federal inspection during the first half of 1926 was the second largest for the period on record, being exceeded only in 1918. Calf slaughter also was the second largest, exceeded only in 1925. Combined cattle and calf slaughter was the largest for the period ever recorded. In spite of this heavy slaughter, prices of slaughter cattle averaged a little higher than during the first half of 1925, and the highest since 1920. The average cost of all slaughter cattle, as reported by packers for the first five months of 1926, was \$7.53, compared with \$7.46 for the same period last year and \$6.69 for 1922, the low year. This higher cost was due to a higher level of prices for the cheaper kinds of cattle, such as butcher cows and heifers, bologna bulls, common and inferior steers, there being an insistent demand for kinds of beef suitable for the sausage trade. The better grades of steers sold around \$1 per hundredweight lower than last year, and the market for these has been generally weak during most of the time.

*U. S. Dept. of Agri. Official Record.*



## BREEDING ACTIVITIES OF THE ARMY\*

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### FIRST BREEDING BY THE ARMY

When the United States entered the World War and proceeded to purchase animals for war work, it very soon became evident to the purchasing officers that animals suitable for cavalry and riding purposes were none too plentiful and also that animals suitable for draft purposes could be obtained with little difficulty in sufficient numbers. The World War also demonstrated that this country had no defined policy of horse-breeding, as animals sent abroad by our government, or purchased here by the Allies and taken across the water, were in the main nondescripts—a mixed and mongrel lot—with only an occasional fine specimen where good blood had been introduced into the common horse types of certain commonwealths, where some study and thought had been given to the horse-breeding industry.

As time went on, it was noticed that fewer cavalry horses of good type were purchased, and in April, 1918, a plan for breeding a suitable type of cavalry horse for the military service was submitted by the Quartermaster General to the Secretary of War and approved, with certain limitations, on May 15, 1918.

This plan authorized the Remount Division of the Quartermaster Corps, working in cooperation with the Bureau of Animal Industry, to obtain as many stallions as were required, not to exceed twenty, from interested owners or horse-breeding associations, either by donation or purchase, at a cost of not to exceed \$1,000 each, and to transport to permanent remount depots for breeding, selected mares with a view to developing a type of cavalry horse for the Army and to encourage the breeding of suitable and serviceable horses by farmers and breeders in the vicinity of the permanent remount depots.

The first breeding actually done by the Army was thus begun in 1918 under the above plan. Thirty-nine Thoroughbred stallions were secured, four by purchase, the balance by gift. Ap-

\*Presented at the sixty-third annual meeting of the American Veterinary Medical Association, Lexington, Kentucky, August 17-20, 1926.

proximately 1500 mares were shipped for breeding purposes to the permanent remount depots at Front Royal, Va., Fort Reno, Okla., Fort Robinson, Neb., and Fort Keogh, Montana. However, this scheme was not put into operation until too late to show any marked results in 1919.

The breeding authorized by the Secretary of War, as above stated on May 15, 1918, was a war measure and it became necessary, therefore, to obtain the sanction of Congress if the breeding was to be continued in time of peace. Then and there the remount idea for the United States was born. Public-spirited men, with vision, determined that there should be a change, and the armistice had scarcely been declared before a plan for general-purpose-horse improvement, formulated by army and civilian experts, had been evolved.

Only those familiar with light-horse breeding conditions in this country have any idea of the improvement of the type of riding animals since the inception of the Federal Remount Service. This organization, working hand in hand with its civilian ally, the American Remount Association, has done a superb service for the country at large, not only from an economic standpoint, but in the matter of national defense. It received such insistent and influential support that the Federal authorities felt the strength of the arguments advanced and voted \$250,000 for the inauguration of a scheme which called for the distribution of stallions of the proper type in the various communities where horse-breeding might be carried on advantageously.

#### THE ARMY PLAN OR BREEDING SCHEME FOR THE ENCOURAGEMENT OF BREEDING LIGHT HORSES (1921)

The breeding appropriation of June 4, 1920, did not become available until July 1, 1920, which was too late to do much that year. In spite of this drawback, however, by a combination of effort by the Remount Service, which had 60 stallions, and the Bureau of Animal Industry, which had 27 stallions, 1250 mares belonging to farmers and the Remount Service were bred. Upon completion of the breeding season in August, 1920, the Bureau of Animal Industry transferred all its light stallions in Virginia and Kentucky to the Remount Service. The Remount Service immediately began to prepare instructions for the breeding season of 1921 and the present Army plan or breeding

scheme, which is now in force, was prepared by Major C. L. Scott, Quartermaster Corps, U. S. A., and approved.

Since the government had initiated a system for the encouragement of breeding a better type of riding animal, it was necessary that the average farmer or breeder be given definite ideas and practical methods of operating. The Remount Service desires to impress that the highest type of animal for Army use is identical with the highest type for commercial use.

The central idea of the steps taken by the Remount Service to encourage breeding, we may say, therefore, is to improve the breed of the light utility horse in the United States. Enormous waste has occurred in the production of scrub horses, and by such work this service has attained a two-fold object of producing a commercial as well as a military horse.

It has been said that the Remount Service was endeavoring to compete or interfere with draft-horse and mule breeding. This is most emphatically not the case, as draft horses and mules are just as important to the Army as riding horses, and stimulation of this kind of breeding is also most necessary. Interest in draft-horse and mule breeding, however, has been stimulated by commercial interest and is being handled in a most efficient manner by the Horse Association of America, which is also lending the American Remount Association invaluable support in its work in light-horse breeding.

Thoroughbred stallions have been donated by individuals interested in the Remount cause. Hundreds of others of the same type have been purchased and a few Arabs, standard-breds and saddle horses have been distributed in territory where there was a demand for them. More than ninety per cent of the sires, however, are clean bred, and a majority of them have racing records.

#### RESULTS OF BREEDING OPERATIONS SINCE THE INCEPTION OF THE FEDERAL BREEDING PLAN (1921 TO 1925, INCLUSIVE)

Official figures show that between 1921—the first dams being bred that year—and 1925, 36,993 mares were bred to Remount stallions, producing 25,000 foals or about sixty-five per cent. The figures given below convey only a meager idea of the growth of the work, for there are on file at this time approximately 1500 applications for Remount stallions, which are being filled as rapidly as desirable horses can be secured, with the funds allotted for this purpose and, this year, more than 400 sires

have been available for the farmers and horse-breeders of the country at the low service fee of \$10.00 per season.

Table I gives a summary of the breeding operations during the years 1921 to 1925, inclusive:

TABLE I—*Summary of breeding operations (1921 to 1925, inclusive)*

YEAR	STALLIONS EMPLOYED	MARES BRED	AVERAGE MARES PER STALLION
1921	159	4129	25.9
1922	219	6799	31.0
1923	236	7505	31.8
1924	277	8654	31.2
1925	308	9906	32.1

#### CLASS OF COLTS SECURED

The class of colts obtained is a great improvement over what has been produced by the "hit-or-miss" methods previously followed in communities where Remount stallions are now placed. Inspections in the past have shown that about one out of ten horses presented for sale to the government was accepted as up to government specifications, where they were gathered together from all sources and from all kinds of sires. At the present time, careful inspection of colts by Remount stallions out of the proper type of mares shows that fully eighty per cent are up to government specifications and that fully twenty-five per cent would bring prices greatly in excess of any government price.

#### SUPERVISION OF BREEDING

Officers of the Remount Service, officers of the Army Veterinary Corps, Mr. G. A. Bell, the consulting specialist in horse-breeding in the Remount Service, and a number of experienced horsemen are closely supervising the breeding work throughout the country and special attention is being devoted to the following points:

*Stallions:* Stallions of proper type, free from transmissible defects, are being placed in breeding centers. They are thoroughly tested for all equine breeding diseases and for fertility before being sent out to agents and are never shifted from one community to another without again being tested. All colts possible are inspected yearly, and any stallion found to be producing inferior colts, with the type of mares available in that district, is removed from the stud.

In placing stallions with an agent, great care is exercised to ascertain what the breeders in his locality desire, and stallions of various breeds and types are placed according to popular demand. Should a stallion, upon being assigned, prove unsatisfactory, he is removed. It is, therefore, definitely known that the stallions now in the stud are rendering satisfactory service. The fact that approximately 1500 applications for additional stallions throughout the country are on file is concrete evidence that breeders are coming to a realization of the fact that a well-bred horse, properly cared for and intelligently handled, has a ready and profitable market.

There still exist, in the United States, thousands of scrub horses that have no salable value. Many horses throughout the Northwest are today being sold for very small sums for fertilizer purposes. Such horses are the results of violent cross-breeding, inbreeding and neglect. They have all the bad points known to the equine family, with few, if any, of the good points, so consequently are an enormous waste. Familiarity with such conditions, and with the production of such misfits, justifies the motto of the Remount, "Not more horses, but better horses."

*Mares:* The selection of proper mares, for service to Remount stallions, is being especially stressed. In many instances, at the inauguration of the breeding plan, it was found that some breeders labored under the misapprehension that a good stallion would produce a good colt regardless of the quality of the mare to which he was bred. The practice also existed of selling all fillies that were of high type or salable, retaining only the worthless ones for breeding purposes. The disastrous results obtained from such practices are being emphasized and breeders are now gradually realizing the fact that the brood mare is as important as the stallion and, also, that the stallion should not be expected to correct all the defects in the mare.

*Breeding localities:* Selection of breeding localities is being carefully made on the basis of:

1. Suitable agents, who will handle the stallion properly.
2. Mares of proper type for breeding.
3. General local interest in breeding riding horses of proper type.

During 1925, about fifty stallions were shifted from localities where these essential points were lacking to better and more suitable communities, and, at the present time, all stallions now



out are assigned to better advantage than at any time in the past.

#### PUBLIC SUPPORT

At the inception of the breeding plan, in 1921, the failure of the undertaking was frequently predicted because of supposed lack of interest among horsemen, as a whole, in the riding horse. It was constantly asserted, with considerable vehemence, that no interest in the breeding of light horses existed in the United States, and that the only way to obtain the necessary interest was to pay liberally for it. At that time it was estimated that it would cost \$1,000.00 per year to operate a stallion, in addition to the purchase price. Two hundred fifty thousand dollars was secured from Congress, with the hope that 250 stallions could be procured and kept in operation.

Compare this estimate with the results accomplished in the year 1925. There was \$150,000 appropriated by Congress, for that year, and \$40,000 was turned into the treasury of the United States for stud fees collected. The cost to the government for this year was, therefore, \$110,000. On December 31, 1925, there were 400 stallions on hand, so that we can readily ascertain, by dividing \$110,000 by 400, that the cost of operation of each stallion, including purchase price of replacements, cost of shipment in distribution, care, maintenance, etc., was actually \$275.

This remarkably low maintenance cost over the estimated cost is due to one factor entirely, that is, the material support given by the horsemen of the United States, in every section of the country, from all walks of life, and on all occasions, which has been whole-hearted and generous in the extreme.

The production, since 1921, of approximately 25,000 colts, valued conservatively at \$170.00 each, has placed, in the United States, a war reserve of riding horses of a total value of \$4,250,000 and, in addition, has enabled many breeders and farmers to raise good horses for sale at a fair profit, instead of a \$25.00 scrub. A continued liberal support on the part of the public, coupled with a continuity of policy by the government, without doubt, will result in constant improvement in the riding-horse conditions throughout the United States, and this improvement will not only be of benefit to the breeder, but also an important contribution toward national defense.

## INTERFERENCES IN BREEDING

In the promotion of this breeding scheme, naturally, many interferences in reproduction are encountered, and it is my desire to submit, at this time, some of the breeding problems that present themselves to those of us who are associated with or assigned to duty at remount depots or Purchasing and Breeding Headquarters.

From personal observations, data and statistics, we have found that the question of the influence of the male, in reproduction, is one of great importance. With this in mind, I will consider, briefly, the question of *condition* of the stallion.

*Condition:* To obtain success in the breeding of the equine family, it is very necessary that the stallion be in a fit condition, at the beginning of any breeding season. This can be accomplished by a thorough knowledge of the stallion and his needs, since they are very temperamental creatures, particularly those that are retired to the stud direct from the track or turf; the establishment and maintenance of systematic methods and stable discipline; and lastly, by a close supervision of details. Therefore, this requires constant attention throughout the entire year, but more especially, two or three months prior to the actual breeding season.

Probably the worst evil that can befall any stallion in the stud is the amount of exercise. Two or three months prior to the breeding season, and particularly so in new or young stallions retired from the track, we have found that at least two hours' exercise, at the walk, under the saddle, is necessary, providing, of course, that they are not incapacitated to such a degree as to make this prohibitive. If such is the case, the exercise paddock or longe will have to suffice for the saddle.

During the non-breeding period, and prior to the three-months hardening stage, the stallions used for depot stud service at the Front Royal Remount Depot, Front Royal, Va., are turned out in five-acre, double-fenced paddocks, with a large, well-ventilated stable enclosed therein, and so constructed as to allow free access at all times. In these paddocks they roam at will, with feed and water in opposite ends, and this procedure of maintenance has proven itself, beyond doubt, as evidenced by the rugged, hearty and hardened condition of the stallions, this spring, in contrast to those that were quartered in our main stallion-stable, and further, by comparison of semen tests for

motility and vitality of spermatozoa, before and after the instigation of this manner of stable management.

The quantity of feed, like exercise, must be regulated to suit the individual, and will depend somewhat on the size, age, condition and length of time in the stud. Good clean oats, wheat bran and timothy hay, of good quality, are the feeds commonly used. Wheat bran (three pounds) scalded and mixed with oats is supplemented for the evening feed twice weekly. Ordinarily, a ration consisting of twelve to fourteen pounds of grain and ten to eighteen pounds of hay, with salt available at all times, will maintain the stallion, with well-regulated exercise, in good condition, but, like exercise, may have to be increased or decreased in individual cases. Just prior to the breeding season, our depot stallions are placed on a wheat ration consisting of the following:

4	pounds	crushed wheat
3	"	wheat bran
3	"	crushed oats
1½	"	linseed meal (old process).

This is the ration for one day and requires ten days to be adjusted, that is, one-tenth of this ration is increased daily and one-tenth of the old ration is decreased daily. It has been found that this ration is very desirable on account of the vitamin content, and as a result there are stimulated greater numbers of spermatozoa, with greater motility and vitality.

In mentioning the point of *condition*, in relation to the influence of reproduction, it is not my intention to convey the idea that the two considerations of exercise and feeding, well carried out, will guarantee or insure a fertile stallion, as outward appearance is by no means a definite criterion by which to judge breeding ability. Condition, however, is considered only as part of good animal management, which is extremely essential in any breeding establishment striving towards success in the promulgation of the equine family.

*Fertility:* In the further consideration of the influence of the male in reproduction, one of the most important and probably the most interesting point to consider is the examination for fertility. This is easily studied by:

(1) The preparation and maintenance of a correct breeding history and records. Assuming that most, if not all, breeding herds or districts contain mares that are fertile, partially fertile

or non-fertile, and that most stallions within that district or associated with a breeding establishment are afforded opportunities in the stud nearly equal, it is highly important to compare and study the history and records of these stallions with reference to the number of copulations necessary for conception. As an example, to show the variance in fertility, I will cite the results of stallions used during a breeding season at the government stud of the Front Royal Remount Depot: Gordon Russell is first, with one foal for each 1.74 copulations; McDonna is second, with 2.16 copulations per foal; Bonnie Jack is third, with 3.44; while Magic II is a poor fourth, with 5.12 copulations per foal.

(2) The physical examination of the genital organs. There is no doubt but that this aspect of the fertility phase has been overlooked in many instances. Of course, when diseased conditions are present in an advanced stage, they are easily detectable, but by investigating the clinical history for previous diseases, such as orchitis, and physical palpation of the testicles, epididymes, seminal vesicles and other parts of the male genital tract, information of importance is obtained.

(3) The third and by far the most satisfactory method is the microscopical examination of semen. In the routine of horsebreeding, it is very easy to procure a sample of semen as the stallion completes his service. Immediately, thereafter, a drop of semen is placed on a slide and by using a No. 10 eye-piece and a 16-mm. objective, a magnification is obtained to determine the number of spermatozoa present, vigor of action, rate of movement and morphology of same. The number of healthy sperm cells in a given field varies in the individual stallions, and as there is no accurate method of determining the absolute rate of travel, which has been estimated between 3 and 4 mm. per minute, nevertheless, one soon becomes accustomed, in examining individuals frequently, to ascertain if the rate of movement is as rapid as it should be. By testing samples at 15- to 20-minute intervals, at ordinary room temperature, one can further ascertain the vitality of the spermatozoa, which should show activity at two hours or more.

By the preparation of stained slides of semen specimens, using Wright's stain, which is preferable, a morphological study is permitted. This at once reveals any abnormalities of the sperm cells, such as: heads too narrow or constricted; heads devoid of tails; bodies showing enlargements or atrophy of same and given off

at one side of the base of the head. This latter characteristic may or may not be a result of the drying in the preparation of the slide. However, since the body and tail are necessary for the migratory motion, the head is the essential and vital part in fertilization, and when great numbers of these heads, in any given field, are so defective as to be clearly recognizable, their power to fertilize is inhibited and consequently this plays a very important part in the fertility of the individual. So that, even though a sample of semen may show great numbers of supposedly active sperm cells, we cannot definitely assume the individual to be entirely fertile, until the morphology of the semen specimen has been determined by means of stained slides.

Therefore, it is our practice to obtain and check microscopically, semen at each service of our depot stallions, during the entire breeding season. This procedure has entailed considerable extra time and patience, but the gratifying results obtained have more than repaid us, in the study of this angle of stallion sterility.

*Infection of the semen:* In complying with our regulations, relative to the control of breeding operations, whereby all stallions, either those newly acquired by donation or purchase or upon being turned in by agents from assigned districts, are thoroughly tested for any evidence of equine infectious abortion, dourine and other infections, it was determined that some stallions were harboring a specific semen infection. Since March, 1925, ninety-one stallions have been tested, by the writer, at the Front Royal Remount Depot. Of this number, bacteriological examination of semen specimens demonstrated no evidence of equine infectious abortion or dourine in any, but did reveal evidence of a *Streptococcus hemolyticus* infection in thirty-one. Of this total of ninety-one stallions, forty-eight were newly acquired, either by donation or purchase, and were tested immediately upon arrival at the Front Royal Remount Depot, or as soon thereafter as possible, and of these forty-eight stallions ten were positive for evidence of *Streptococcus hemolyticus* infection in the semen.

Due to the high percentage of stallions showing evidence of this infection and being fully cognizant of the after-effects that result in the continual breeding of animals harboring this infection, an experiment was instigated in three stallions, belonging to the Front Royal Remount Depot, and from which positive evidence of this infection was obtained at every test. Autogenous bacterins were prepared from samples of semen of each of these



stallions. These were then injected subcutaneously, the initial dose being 1 cc and increased by that amount every fourth day until a dose consisting of 5 cc was being administered. This treatment was continued until twenty-five injections of 5 cc each had been administered at four-day intervals. Bacteriological examinations of semen samples, consisting of four services from each stallion, were made at ten-day intervals during the test, and are still being conducted, following the conclusion of the administration of the bacterin series. Thus far the results of this experiment have been very encouraging.

*Sterility of mares:* While the percentage of sterile or partially-sterile stallions is relatively high, nevertheless the greatest difficulty to overcome, in any breeding community or establishment, is the vast number of barren or non-productive mares. We, like other breeding establishments, find our government herds not immune to the presence of non-productive mares, but the percentage of such mares is much lower than in outside establishments, due to the fact that we are required to carry on breeding operations on a definite amount of money appropriated by Congress each year for this purpose, and, since this appropriation is governed, somewhat, by the yearly production of foals, we find it imperative, from an economical standpoint, to carry as few non-fertile mares as possible. For fear of any misunderstanding, I deem it wise to state that on detection of a barren mare in our breeding herds, and one which does not warrant retention for an additional year, we have an outlet for such, if of proper age and free from any disease or pathological unsoundness rendering her unsuitable for duty, by sale to officers of the Army, as private mounts, or by issue to organizations for duty status. If undesirable for this mode of disposition, she is condemned and destroyed.

Newly acquired brood mares, either by donation, purchase or transfer from other stations or three-year-old fillies, raised from our brood-mare herds, are given a thorough examination before acceptance as brood-mare prospects. In addition to a careful consideration of the breeding history and records, when available, this examination consists of the following:

1. Samples of blood serum are forwarded to our nearest veterinary laboratory for application of serological tests for equine infectious abortion and dourine.
2. Sterile vaginal and uterine swabs are forwarded for micro-

scopical examination for evidence of equine infectious abortion, *Streptococcus hemolyticus* and other bacterial infections.

3. A thorough physical examination is made of the genitalia for evidence of cystic degenerated ovaries, retained corpus luteum, salpingitis, metritis, cervicitis and vaginitis.

As a result of this routine examination of all non-pregnant mares, many causative agents for sterility have been detected.

#### CYSTIC OVARIES

By palpation, it is not difficult to determine the shape, size, character and consistency of the ovaries and, during estrum, to note depressions on their surface, as a result of ovulation. A corpus luteum, in various stages of growth, may be detected, which, by its presence, may be either of the true or false type. When it persists after pregnancy for an abnormal length of time, it causes a disturbance in reproduction, either temporarily or permanently, by pressure or by cystic degeneration. In 1924 and 1925, detailed autopsies were conducted and cultures taken from the various parts of the genital tract and specimens prepared for histo-pathologic examination from eleven mares of the Front Royal Remount Depot brood-mare herd. In summing up the results of this examination, the outstanding feature was the finding of cystic degeneration in one or both ovaries in nine of the eleven mares. Cultures made from these cysts were sterile. There is considerable contention among investigators as to their origin. The majority maintain that they originate in the graafian follicle; others, that they arise independent of the follicle. Histo-pathologic sections prepared by Captain R. A. Kelser, Veterinary Corps, U. S. A., from the various specimens obtained in this investigation, indicated that, in this instance at least, the cysts originated in the graafian follicles.

In one mare, a *Streptococcus hemolyticus* infection of the vagina and uterus was noted, which was, no doubt, the main factor for sterility in this particular case. In the remaining case the apparent cause for sterility was not noted.

As the ovaries of these mares were enveloped in a very tough capsule, it was impossible to rupture these cysts by manipulation through the rectum, hence all attempts at relieving this condition, by this method, were of no avail.

#### INFECTION OF THE GENITALIA

Under this heading we find such conditions as vaginitis, cervicitis and more commonly metritis. From our routine procedure

of examination, by means of sterile swabs, we have isolated many strains of organisms, the one most prevalent being a hemolytic streptococcus which, no doubt, is the active cause for sterility in these mares.

During the year 1925, there occurred, in the Front Royal Remount brood-mare herd, a total of ten abortions, from all causes, out of seventy-three mares, and in 1926, a total of two abortions, from all causes, out of sixty-two mares. Of the ten abortions in 1925, one occurred in B. M. 459 while under treatment in the Veterinary Hospital for strangles and influenza. Bacteriological examination of uterine fluids, placental and fetal tissues failed to demonstrate any evidence of *Salmonella abortus-equinus* or *Streptococcus hemolyticus*, but did reveal an *E. coli* infection of the uterine exudate. Another mare (B. M. 539) demonstrated *E. coli* in large numbers in the uterine exudate and also staphylococci in the fetal umbilical cord. Two other mares, one of which aborted twins, failed to demonstrate any infection, bacteriologically. A fifth mare showed only an *E. coli* infection of the uterine exudate and swabs. The remaining five mares demonstrated hemolytic streptococcus infection in uterine exudates and swabs, while one of these revealed hemolytic streptococci in the fetal heart, liver, lung and umbilical tissue. Of the two mares aborting in 1926, one (B. M. 513) demonstrated this infection in the uterine exudate and swabs, while the second mare showed it to be present in the uterine exudate, swabs and fetal heart tissue and peritoneal fluid with sterile fetal liver, lung and splenic tissues.

As a result of the abortions which occurred in 1925 showing a *Streptococcus hemolyticus* infection as being the predominating one, a polyvalent hemolytic streptococcus bacterin was prepared from all the strains of this organism which had been isolated from specimens of semen, uterine exudates, swabs and fetal tissues in the Front Royal Remount stud. This bacterin contains 500,000,000 organisms per cc, and is administered subcutaneously, in 2, 4 and 6-cc doses at intervals of four days. In 1925, a series of doses of this bacterin was administered at approximately the fourth month of pregnancy. This year, however, a series was given to all mares, either those of the old herd that were non-pregnant or those newly acquired, before the commencement of breeding operations. A second series is given to all mares in the breeding herd at the fourth month of pregnancy and continued thereafter as an annual administration.

It is interesting to note, in the foal crop of 1926, that evidence of omphalophlebitis or dysentery neonatorum, which is more or less prevalent in most breeding establishments, was entirely absent. Whether or not the actual absence of any symptoms of these serious foal maladies was as a result of this bacterin administration is, of course, a matter of discussion. At least, in those cases which can be directly traced to in-utero infection, the non-appearance of such symptoms may have been inhibited, somewhat, by this bacterin procedure.

#### EQUINE INFECTIOUS ABORTION

It is not my intention to dwell on this subject, which has been very capably presented before this body by Major G. H. Koon, V. C., and Captain R. A. Kelser, V. C., U. S. A., at the Columbus meeting, in 1920, and again at the St. Louis meeting, in 1922. However, I do want to take this opportunity to state that we have, without question, controlled all outbreaks of this disease, in our government herds, by the annual administration of our equine infectious abortion bacterin.

#### PASTURE BREEDING

Due to the irregularity of estrum and with the uncertainty of the actual time of ovulation, over which we have no control, and also because a large percentage of barrenness in mares is not a result of disease or other disorders in reproduction, but probably due to the actual methods of breeding, we are instigating, to some extent, pasture breeding at the Front Royal Remount Depot.

In 1925, ten virgin three-year-old fillies were selected and turned out in pasture with a stallion, which had just been retired from the track, but found to be entirely fertile, although in non-breeding condition. Due to the lack of condition for this procedure, which necessitated his removal to the Veterinary Hospital for treatment on three different occasions, his actual time in pasture, with these fillies, consisted of forty-nine days.

Five of these fillies, or fifty per cent, foaled this spring. This high percentage of foals, in this project, was thought to be quite remarkable, when considering that only three-year-old fillies were used and, also, the short duration of time that the stallion was afforded to be with them. Close observation of this pasture revealed that not a single service was made during the day except at dawn or sunset, so thus it appears that these two periods of the day must have been the auspicious ones for the fulfillment of these equine instincts.

## METHODS OF ANTHRAX IMMUNIZATION\*

*By C. E. SALSBERY, Kansas City, Mo.*

The history of anthrax vaccination begins with the work of Pasteur, when, in 1881, he demonstrated the possibility of attenuating virulent anthrax bacilli to such a degree and with such certainty that they could be used in vaccines to immunize animals against the disease. The great principle that underlies this method of vaccination is the foundation of every effective process for producing active immunity in susceptible animals. It is true that there are modifications of the original method in use, but the basis upon which their successful application depends is the same as that upon which Pasteur built his classical theory of vaccination, namely, that recovery from an infectious disease, whether mild or severe, whether artificially induced or from natural exposure, produces an immunity which in most cases protects against subsequent attacks.

Applying this principle to anthrax, he prepared vaccines by special cultivation and attenuation and proved that sheep could be safely immunized to withstand fatal exposure. But Pasteur's vaccines were unstable and could not be used with the best results unless they were fresh or had been kept cold and in the dark; hence, the wholesale production and distribution of them made such care in handling impossible.

These vaccines, therefore, have not been entirely satisfactory because the duration of their full effectiveness was limited. Furthermore, there was always the danger of causing anthrax, or at least such severe reactions that the animals were sometimes seriously incapacitated. Careful vaccination with faultless vaccines has been followed with bad results, due to the peculiar susceptibility of certain individuals to anthrax. The veterinarian using these vaccines had no way of determining these conditions, hence their general use in this country has been abandoned.

Later, Cienkowsky produced vaccines containing bacilli and spores that maintained their effectiveness longer, but in other respects were virtually the same as Pasteur's and disagreeable accidents followed their use also.

Detre prepared spore vaccines by using agar cultures washed into glycerinated salt solution. The attenuation of his vaccine

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was the same as Pasteur's, but possessed the quality of retaining potency much longer. His method of producing spore vaccines was generally the same as that used today, which permitted very accurate standardization and determination of potency. But Detre's vaccines did not induce sufficient immunity to protect animals satisfactorily against natural exposure of high virulence, and furthermore the possibility of causing anthrax was not eliminated.

In 1895 Marchoux and Selavo, working independently, produced an anti-anthrax serum and, later, Sobernheim, Detre, Ascoli and others produced it. This serum proved to be of high potency and the commercial anthrax serum of today is the same as that prepared by Sobernheim for his simultaneous sero-vaccine immunization. This method had several notable advantages over the old double vaccine, but they are too well known to need recounting here.

Unfortunately, however, the simultaneous method of Sobernheim did not confer sufficient immunity upon animals in areas where anthrax occurs in its most virulent form. To relieve this condition, special spore vaccines, known as number 3 and number 4 were developed as supplementary treatment and constitute what is known as the "triple treatment." It has been used extensively in the areas of severe infestation. Yet in spite of this additional treatment, the losses in these areas have not always been sufficiently reduced to make the method wholly satisfactory. It frequently causes severe reactions and incapacitates animals from two to ten days or longer. Furthermore, it necessitates presenting the animals for treatment three times. These conditions have had a tendency to cause an unfavorable attitude against serum and spore vaccines. The owners of live stock have in some instances permitted the disease to take its toll, rather than sustain the combined expense of vaccination and the subsequent loss which sometimes occurs. It is possible that this feeling has been exaggerated, but discussions of anthrax problems at veterinary meetings do not give such an impression.

#### ANTHRAX AGGRESSIN SOUGHT

We desire to make it emphatic that this brief discussion of the recognized anthrax products is not a condemnation of their value, for it is true that Pasteur's vaccines, as well as serum and spore vaccines, have controlled the disease under ordinary conditions and have been of value in the extremely virulent areas, notwith-

standing their failure to reduce the losses to a satisfactory minimum. But there has been a demand for some product with greater immunizing qualities, though without greater inoculation risk, and while attempts have been made to meet this demand with spore vaccines of sufficient virulence to induce severe reactions, we have sought to meet it by developing an anthrax aggressin.

That we have not proposed a new hypothesis of our own regarding aggressin therapy, one may be convinced by referring to the work of Kruse and his lysin theory which is the very beginning of this method of immunization, and later, for its specific application, one has the almost unlimited investigations of Bail, Petersson, Weil, Okuda, Matsumoto, Zschokke and others whose exhaustive experiments leave little in doubt regarding the justification of aggressin therapy and particularly anthrax-aggressin therapy.

#### PASTEUR AND AGGRESSIN IMMUNITY THE SAME

The theory of aggressin immunity, particularly in the case of pure parasites, does not affect the basic principle of immunity underlying Pasteur's hypothesis. Bail and other investigators have not sought to explain aggressin immunity in any other way. Okuda states that if one considers the known methods for successful active immunization for anthrax, there are only two surely active ones known, namely, the preliminary treatment with attenuated cultures, after Pasteur, and that with body fluids of infected animals. Bail has always defended the standpoint that Pasteur and aggressin immunization represent fundamentally the same process; that the attenuated anthrax culture acts only through the limited amount of aggressin which it forms in the body and that maximum protection is reached only as the culture approaches full virulence. That the nature of the aggressin changes with the attenuation seems quite evident from this fact and especially since cultures that have been completely deprived of virulence produce no immunity. Zschokke says that the disadvantage of an inoculation with still living, though attenuated, germs consists chiefly in the fact that only those doses which border on the lethal dose for the inoculated animal have the power of conferring a sufficiently powerful and a sufficiently lasting protection. But these circumstances do not alter the statement that fundamentally Pasteur and aggressin immunization are the same.

Pasteur's vaccines were used by Bail in comparative tests with aggressin. Regarding this, he says: "As for the active immunization of rabbits against anthrax, Pasteur's method of inoculation with attenuated cultures was used at first, about the value of which there can be no doubt. It succeeded too, in many cases, but the losses were unusually large, probably from the same cause which occasioned Sobernheim's difficulties at the beginning of his much more extensive experiments. This immunization, however, was soon abandoned for another, which depends on the use of anthrax edema. Rabbits, often after a single injection, certainly after a repeated one, of two to five cc of edema, obtained a lasting, effective protection against inoculation with virulent anthrax. This method of immunization seems to be even more effective with sheep." In our field work of last year, the comparative tests were of little value because anthrax did not appear in the areas where these tests were made. However, there are some comparative tests in this year's vaccination and they will be referred to later in this article.

Immunity against anthrax has none of the characteristics of the bactericidal immunity against cholera, typhoid, and a number of other diseases. Bactericidal substances have never been found in animals immune to anthrax, which in any way compare with those that exist in the serum of normal rabbits. Anthrax immunity cannot be classed as bacteriotropic or antitoxic; it cannot be produced with dead cultures or their extracts and, prior to the investigations of Bail, the only treatments that gave practical results were those of Pasteur and Sobernheim.

#### HYPOTHESIS OF BAIL

Bail sought to explain anthrax immunity by an hypothesis which assumed that, in every true infection, the infected animals and the infecting bacteria "must have arrived at an abnormally irritated, morbid condition" (Okuda) and that the resistant forces of the animal produce a condition to which all saprophytic bacteria succumb, but that the genuinely parasitic species have the capacity to resist and the power to paralyze these resistant forces by virtue of secreted substances, called aggressins. These aggressins spread throughout the body, but are to be found in the highest concentration and with greatest activity in the first bacterial colonization in fatal infections. The injection of these aggressins into an animal occasions the formation of anti-aggressins and produces an immunity which is not directed against the

bacteria themselves, but against their aggressins. This cannot be identified with, but may be compared with, antitoxin immunity. The exhaustive investigations of Bail, Okuda, and Matsumoto, working exclusively with anthrax, show that they produced a very high degree of immunity in rabbits and sheep by injecting sterilized anthrax aggressins.

Another feature of aggressin activity is that avirulent pathogenic organisms may become virulent when injected with their specific aggressins or soon after. This is a well-known fact and nothing new can be said about it. We have repeatedly produced fatal infections by injecting small doses of bacteria with aggressins. This may be done by establishing the smallest possible dose that will kill rabbits within ninety-six hours. We have used one-fourth of this dose mixed with aggressin and have found that the animals die even earlier in most cases than the controls which received the full amount. These fractional doses with aggressin even acquire sufficient virulence to kill animals that have been previously treated with immune serum. That this aggressive action may be of significance in exposed herds has not been fully established for anthrax. Bail makes the following conclusion from one of his sheep experiments: "The body of a normal animal is able to assimilate only a certain quantity of edema within a limited time. If this is exceeded, instead of immunity (through antilysins) there is hypersusceptibility (through presence of the injected lysins)." He says again: "It is a question not only of the quantity of edema, but also of the method of introduction. This refers to the question of giving one large dose or several smaller doses. But there is considerable doubt whether the repeated smaller doses have any advantage over the one large dose, especially in unexposed animals. From this, we have a phenomenon quite new for the doctrine of immunity, which can be shown in experiments with rabbits, although far less clearly than with sheep. The edema of anthrax animals produces a fluid which, after killing of all and removal of most of the bacilli, is in itself quite harmless for normal animals, and has not the properties of a poison. After its injection in certain not-too-great amounts, and after the lapse of eight or ten days, there arises an immunity against even very serious infection. If, however, the time has been too short, or if, with the correct time, a certain amount has been exceeded, the body is incapable of assimilating it and there appears a hypersusceptibility. The

same amount, however, leads safely to the desired immunity if it is introduced only at sufficient intervals."

#### AGGRESSIN IN EXPOSED HERDS

Whether this condition is of sufficient importance, in the case of anthrax, to make it a dangerous product in exposed herds is not yet entirely established. But if one considers the general use of other aggressins, without regard to exposure, as a safe procedure, we are inclined to believe that the use of anthrax aggressin should not be any more hazardous. However, in two or three instances in our field experiments of last year, it seems that the aggressin may have hastened the death of a very few animals. In one herd, four deaths occurred during the first four days following treatment. In such cases, one cannot determine whether the deaths were due to aggressive action, or simply to infection before immunity became established, for it is certain that no measure of immunity could have been effected in a period of four days.

Nine cattle in this herd were dead of anthrax before vaccination; 675 were treated and only one died later in the summer; 25 cattle were left as controls and, of these, six died during the summer. In another herd, 628 cattle, 6 goats, 47 sheep and 69 horses and mules were vaccinated after five animals were dead. Here, seven animals died within 48 hours, indicating the probability of a strong aggressive action. Six animals died later in the summer. An equal number of animals of the same species were treated with serum and spore vaccine and in ten days were given spore vaccine number 3. Of these, six died within eight days and six more later in the summer. In another herd of 1400 cattle, where 100 were dead, 500 were vaccinated and no deaths followed; 900 were left untreated and, of these at least 200 died within a period of 25 to 30 days. The question of aggressive action in exposed herds, therefore, is not settled. Losses that may be due to aggressive action can be eliminated by early vaccination, or if late vaccination is practiced in herds severely exposed, small doses of serum may be given with the aggressin.

That there are active substances in the aggressin may be shown further, in two ways: by the production of an immune serum and by the formation of precipitative substances. The sera of rabbits and sheep, immunized by Bail, Okuda and Matsumoto, possessed strong protective and precipitative properties. Horses that we immunized with aggressin alone showed similar



protective and precipitative properties. The results of our protective experiments have already been published and Bail concludes from his experiments that decided protective value is shown; so high that the serum of the immunized rabbits injected intravenously, even in fractions of a cubic centimeter, protects rabbits from subcutaneous injection with about a thousand bacilli. With the serum of the sheep, at least one cubic centimeter is necessary.

#### A REMARKABLE BACILLARY FINDING

Complete protection of mice was successful in only a fraction of the cases, while none of the passively-immunized guinea pigs survived. Yet, even with these animals, the action of the serum was shown by the lengthening of the duration of the disease which exceeded that of the control animals five to eight times. In the organs of such mice and also in those of such rabbits as had received too small quantities of serum, there is often a remarkable bacillary finding. If the spleen, especially of the rabbit, is examined, the number of visible bacilli is small, and they show signs of degeneration, poor staining, swelling, many look like empty capsules and the arrangement is peculiar. In smears made from the liver, bacilli are found only in separated groups, instead of being uniformly distributed. These groups appear as tangled threads, a condition not common in ordinary tissue-juice smears.

The duration of this passive immunity is comparatively short and rabbits that receive a sufficient dose of the serum to prevent either general or local symptoms after inoculation are not protected against a new exposure if injected ten days after the first inoculation. But when edema occurs with the injection of virulent bacilli, then a lasting immunity is produced. There is a peculiarity about such edemas, distinguished from those in normal rabbits, that by practice one can usually tell whether the animal will survive or not. The swellings in normal animals are soft and diffuse. But those in protected animals produce a certain hardness and a well-defined outline. They disappear quickly and frequently become purulent in the center. From the extensive investigations of Bail, Okuda, Matsumoto and others, as well as from our own observations, there is ample proof that animals immunized with aggressins possess unquestionable protective properties in their sera.

## PRECIPITATIVE PROPERTY EASILY DEMONSTRATED

The precipitative property is easily demonstrated and the technic is the same as that for making the ordinary precipitin tests. We have performed many precipitin tests and, in a large percentage of the samples, have seen decided discs in dilutions as high as 1 to 5000. In none of the samples tested did we fail to obtain discs in dilutions of 1 to 3000. These tests were scrupulously controlled to prevent any possible error. Tests were made with aggressin and anti-aggressin serum, also with aggressin and anti-bacterial serum, and it was noted that the precipitation was somewhat stronger in the case of the anti-bacterial serum. This was probably due to the much longer time that the anti-bacterial horses had been on treatment. The two anti-bacterial horses whose sera were used had been on treatment over two years, while the anti-aggressin horse was treated only about ten weeks. Regarding this phenomenon Bail states that a strongly precipitative action of the serum on edema may be emphasized. Since the formation of isoprecipitins is practically unknown, and since normal rabbit serum as well as that of animals immune to other diseases leaves the edema fluid clear, it must be assumed that a substance formed by the anthrax bacillus while growing in the animal's body occasions the precipitation and, after immunization, animals in the test showed very marked precipitative action and protective power.

Matsumoto concludes his experiments with the statement that in mixing the rabbit edema with rabbit immune serum, there occurs a turbidity and later a precipitation which is absent on the addition of normal rabbit serum and is also absent when one adds rabbit immune serum to the body fluids.

Whatever the nature of the aggressin may be, it is not known how these protective and precipitative phenomena are accomplished; but whatever they are, they seem to be formed only by growth of the bacteria in the animal body. Should we wish to make a comparison of anthrax anti-aggressin serum with one of the known serums, it has the most likeness to antitoxic serum, but the aggressin cannot be classified as a true toxin. As a basis for such a comparison, we may state that all investigations indicate that the surest means of depriving anti-aggressin serum, outside of the animal's body, of its effectiveness, is by adding aggressin to it. This was proved by Matsumoto and about which he says: "Whereas accordingly in the edema used to produce immunity,

a substance exists which excites effective antibodies, on the other hand, it is capable of destroying them as soon as they are produced." Neither in the body of the culture-bacilli, nor in their growth in the presence of serum, nor in the body of the capsule containing bacilli from the animal body was this substance discovered through all the investigations. Whatever the nature of this substance may be, there is a certainty that it is not a toxin but it has very strong antigenic properties, which is shown by the presence of precipitins in the immune serum and by the immunizing properties demonstrated in a great many animal tests as well as by the passively-immunizing properties of the anti-aggressin serum.

#### VALUE OF ANTHRAX AGGRESSIN DEMONSTRATED

Immunizing experiments to establish the value of anthrax aggressin have been very extensively conducted. Bail, Okuda and Matsumoto used a large number of animals in conducting their tests. The reports of their work are too voluminous to be recorded here, but may be found in the references appended to this article. The results of our own investigations, most of which have been published, are fully substantiated by their conclusions. We experienced difficulty in permanently immunizing guinea pigs, although the effect of the aggressin was clearly shown, since many of the treated pigs lived much longer than the controls. Okuda investigated this condition and concludes that there were indications that the course of the disease could be influenced in these animals. The guinea pigs given the most preliminary treatment lived decidedly longer and also produced different reactions. It was noted that the immunity of guinea pigs was stronger if they were treated with guinea-pig aggressin. No satisfactory explanation of this has been given, but investigations on the better protective action of homologous bactericidal immunizing sera indicates that the results are much more satisfactory than with the use of heterologous sera. This may also be true of the aggressin immunity. It is possible that the character of the aggressive substance which the bacilli discharge depends on the protective devices which it has to overcome in the animal's body, and in this respect the aggressin from one species of animal may differ from that from the body of another. It is necessary to investigate this point further, inasmuch as it seems to have some significance in the immunization of different species of animals.

As a further indication of the immunizing effect of aggressin and anti-aggressin serum, the bacillary content of normal and of

actively- and passively-protected rabbits was investigated. Bail immunized rabbits with aggressin and in 18 to 20 hours after the intravenous injection of .5 cc of broth culture, they, together with normal rabbits similarly exposed, were bled to death. Plates were inoculated with one loop of organ-blood from the spleen, liver, kidney and bone-marrow of the immunized and normal rabbits. We give the results as shown in the table of one test: Plates from spleen of the treated rabbit gave no colonies; from the spleen of the normal rabbit, over 10,000; from the liver of the treated rabbit, two colonies; from the liver of the normal rabbit, 3264; from the kidney of the treated rabbit, 7 colonies; from the kidney of the normal rabbit, 8720; from the bone marrow of the treated rabbit, one colony; from the bone-marrow of the normal rabbit, 1848. Numerous tests of this character were made by Bail, with results that show decided immunity in the aggressin-treated animals. Similar tests were made by passively immunizing rabbits and the records show that there is really no difference between active and passive immunity in this respect.

#### AGGRESSIN TESTS ON RABBITS

We have recently started making the same tests with aggressin-treated rabbits only, but our inoculations were made with 0.5 cc of a rather weak suspension of anthrax bacilli in 24-hour broth and this probably accounts for the difference between our plate colonies and those in Bail's experiments. In the tests we have made so far, the average number of colonies in the plates made from the livers of treated rabbits was one-fourth colony (1 colony to 4 plates). The average from the livers of untreated rabbits, 16; colonies from the spleen of treated rabbits, none; from the spleen of untreated rabbits, 118; plates from the kidneys of all rabbits were negative. One untreated rabbit, not bled, died in about 60 hours, indicating virulence of the culture. We also made the observation that the pleural and peritoneal cavities of the untreated rabbits contained quantities of exudate (probably aggressin) while in the treated rabbits there was no more fluid than the normal amount of moisture found in these cavities.

After all this immense amount of laboratory work and artificial testing, there still remained the remote possibility of failure against natural exposure and under different conditions. All doubt, however, had been removed as to the immunizing value of aggressin, artificially tested and theoretically substantiated, but to be more conclusive, field tests were made last year. The

results have been published and need be referred to here only in a general way. In all, 12,685 animals were vaccinated; 1759 were in areas where anthrax did not appear and consequently were of no value in testing their immunity; 10,814 were in southern Texas, where anthrax appeared in a virulent form; 35 animals of this number died of anthrax. Of 2684 untreated exposed controls, 726 died; 163 deaths were reported by owners before vaccination. This work was carefully checked and these figures are reliable, especially considering the scope of the experiment.

The results of the use of aggressin, in treating more than 60,000 animals so far this year, indicate that the results of last year's work were not overestimated nor incorrectly interpreted. The opportunity for comparison between aggressin and serum and spore vaccines was made possible this summer in southwest Texas, in an outbreak which covered a large area. The serum and spore vaccines of different producers were used in herds in proximity to others that were treated with aggressin. A review of the available records shows that a single dose of aggressin was as effective as the simultaneous treatment, followed by spore vaccine No. 3 and in a few instances where the latter method did not check the disease immediately, aggressin was used with decisive results.

#### LOSSES QUICKLY CHECKED

It is further noted that the losses were checked somewhat more quickly in aggressin-treated herds than in the others. This is due to the fact that aggressin is more quickly effective. Bail states that the reduction of the edema formed naturally by Pasteur's method corresponds to the injection of that obtained artificially from another animal. If that be the case, then we could expect somewhat earlier effects from aggressin. Furthermore, some animals are incapable of producing the reaction of their bodies necessary to the production of immunity. It is they which not only impair the statistics of success from vaccination but also occasion the losses from inoculation in all those processes which make use of live disease germs. Deaths from inoculations are certainly excluded in the aggressin treatment but not deaths from infection in case the desired anti-aggressin formation is absent.

The complete data on the results of this year's vaccination have not been sufficiently assembled to make a comprehensive report, but a conservative review of what is at hand seems to



indicate that anthrax aggressin has a place in the category of recognized anthrax-immunizing agents. We do not claim that the results are perfect nor that improvements are impossible. Some have already been suggested, which should make the product more valuable.

In seventeen herds, consisting of 193 animals, no vaccine or aggressin was used. In other words no attempt was made to check the disease and the losses amounted to 28.5% with a possibility of further losses.

In twenty-one herds of 1043 animals, simultaneous treatment was used and in most cases was followed with spore vaccine No. 3, and the losses amounted to 13.432%.

TABLE I—Results of vaccinations

LOSSES BEFORE VACCINATION	VACCINATED WITH AGGRESSIN	DEATHS			
		WITHIN 14 DAYS		LATER	
		NUMBER	TIME	NUMBER	TIME
1	200	0		None	
8	150	2	1 week	None	
2	300	12	10 days	None	
1	75	4	10 days	None	
0	50	1	10 days	2	35 days
2	40	1	10 days	None	
14	815	20		2	
Loss within 14 Days 2.6%					
	GIVEN SIM- ULTANEOUS TREATMENT			ADDITIONAL TREATMENT AND LOSSES	
0	10	3	1 week	Aggressin. None later	
0	130	31	18 days	Aggressin, 18th day. 3 died in 4 days.	
0	13	1	13 days	Aggressin. 1 died in 24 hours. None later	
2	57	6	14 days	Spore vaccine No. 3. Lost 1 in 2 days. None later	
2	300	17	14 days	Spore vaccine No. 3. Lost 1 in 2 days. None later	
0	45	7	14 days	Spore vaccine No. 3. Lost 2 in 2 days. None later	
0	31	2	14 days	Spore vaccine No. 3. Lost 1 in 7 days. None later	
0	7	2	14 days	Spore vaccine No. 3. Lost 1 in 7 days. None later	
4	593	69			
Loss within 14 days 13.3%					

In fourteen herds of 1280 animals anthrax aggressin was used and the losses amounted to 3.903%.

Table I contains some additional data on results obtained in some other herds where aggressin was used. It is interesting to note that the results in these two groups of herds are quite comparable and may be fair indications of the results to be expected under similar circumstances elsewhere.

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#### DISCUSSION

DR. C. E. COTTON: Were these tests made on farms or areas that were infected?

DR. SALSBERY: These later reports came from an outbreak in southwest Texas, in an area where anthrax appears to be quite prevalent this summer.

DR. W. F. CREWE: We do not think that we have an anthrax district in North Dakota, as we have had less than fifteen outbreaks in the past twenty years. We have had five outbreaks in the past two weeks. These have occurred from ten to fifteen miles apart. We have no way of accounting for the infection. Material from the outbreaks was sent to the laboratory and we were advised that, under the microscope, the germs present resembled anthrax. It took from three to four days to complete the test on laboratory animals. As soon as we learned of the result, we wired and secured anthrax aggressin and serum. By that time fifteen animals in one herd had died. Six sick animals were treated with anti-anthrax serum, of which four recovered. Will they have acquired an immunity or should they be vaccinated with aggressin? What procedure would you recommend with aggressin and serum in infected animals?

DR. M. E. MAIER: I believe that I can answer that question from a practitioner's standpoint. I have given as high as 100 cc of serum to animals showing no rise in temperature. Quite a number of these animals came down and died of anthrax in from three to thirty days. I have also vaccinated with serum and spore vaccine and lost quite a number of animals from anthrax, ten days to ninety days after inoculation. For the past two seasons, I have used several thousand doses of anthrax aggressin, apparently with good results. I feel, however, that it will take another season or two to say definitely to what extent aggressin will hold in this hot-bed of infection. I have a number of case reports with me that I would like to give, but I feel that there is not time.

DR. SALSBERY: The question was asked regarding the injection of sick animals with serum and whether or not aggressin should be given afterwards. In cases where the infection has been severe enough to have produced subcutaneous swellings, it is not necessary to give them aggressin after recovery following the injection of serum. The supposition is that, in the swellings, sufficient aggressin or some other immunizing substance is formed to give the animal an active immunity. In cases where the animals are visibly sick and

treated with serum but in which cases no swellings can be found, they should be treated later with aggrassin.

European investigators, whose references are appended to my paper, have found that experiment animals that were treated with serum and live cultures, in which the injection of the live cultures produced no edematous swellings, were later subjected to exposure and found to be susceptible, while in those cases in which the serum was sufficient to protect them and in which the anthrax cultures were virulent enough to cause edematous swellings, the animals were permanently immunized.

It would seem from these findings, then, that sick animals without swellings that recover after serum injections would not be permanently immunized as a result of having had anthrax, while those that develop swellings subsequently develop a permanent immunity.

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### DETROIT VIEWS MUTT PARADE

Detroiters had an opportunity to see the first annual mutt parade held Saturday afternoon, November 6, 1926, under the auspices of the *Detroit Free Press*. Bozo, belonging to Jackie Sweeney, was crowned the "Greatest Mutt in Detroit" and his proud owner went home with twenty dollars in gold in his pocket. Prizes of ten dollars in gold were awarded the largest mutt, the smallest mutt, the skinniest mutt, the fattest mutt, the cleanest mutt, the dirtiest mutt and the mutt with the curliest tail. Three similar prizes were awarded for the first, second and third best turnouts, each consisting of mutt and wagon. Dr. A. L. Tow, a Detroit veterinarian, acted as one of the bench of five expert mutt judges.

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### SAWDUST FOR BOSSY

Sawdust for breakfast has materialized as an actual fact, but for cows rather than for human beings. Cattle do like it, however and on the basis of the state of supply and costs of production, sawdust is not yet a practicable source of nourishment even for cows, according to J. G. Archibald, as reported in *Science*. To render the sawdust available as a cattle food it is treated with weak sulphuric acid, which converts part of the cellulose—the basic chemical constituent of all wood—into sugar. The resulting liquor is neutralized with lime and then evaporated to a thick syrup, which is finally mixed with the dried residue. The product, when ready for feeding, is a dark-brown, powdery meal, with a sweet woody odor and a woody flavor. But, alas; no sensible dairy cow could be persuaded to eat more than four pounds daily and produced less milk than when fed on from one-half to one-third as much cornstarch. The experimenter concludes that, for the present, sawdust has little economic value as fodder.

## EFFECT OF ADSORBENTS UPON POTENCY OF TUBERCULIN

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During the course of certain chemical studies of tuberculin we had occasion to test, on guinea pigs, several small, experimental lots of tuberculin. The tuberculins before filtration were absolutely clear to the eye but in order to insure complete freedom from the bodies of tubercle bacilli which might be present in very small numbers, we passed a portion of each of the dilute tuberculins through Berkefeld or Mandler candles. We were much surprised to observe in certain cases, though not always, that filtration seemed to remove a large part of the potency. In order to determine whether or not this effect of filtration was due to adsorption by the diatomaceous earth (kieselguhr) of which the filters are made, and in order to get some data on the question of adsorption of the active substances of tuberculin by other materials, we have carried out a number of experiments the results of which are very briefly summarized in this paper.

Our tests have been made with diluted tuberculins prepared in part from glycerinated-broth cultures and in part from cultures on a synthetic medium of the following composition: asparagin, 5 gms.; magnesium sulphate, 1 gm.; sodium citrate, 0.5 gm.; dipotassium phosphate, 1 gm.; glycerin, 70 gms.; ferric citrate, .062 gm.; and water, 1,000 cc. We have used as adsorbents chiefly (1) powdered kieselguhr; (2) a good grade of Fuller's earth, known commercially as Lloyd's reagent; and (3) a finely divided charcoal known commercially as norite. In all cases the tuberculins have been diluted with water before treatment with the adsorbents. It has been the usual practice to dilute in such a way that 200 cc of the solution would contain the equivalent of 10 cc of old tuberculin. In all cases the solutions so prepared were crystal clear before adsorption. Separate portions of such clear, diluted products were mixed with the different adsorbents and allowed to remain in contact with them for approximately 15 minutes, with frequent stirring. The adsorbents were then removed, by filtration through paper. Aliquots of the several filtrates were evaporated somewhat, on the steam bath, and phenol was added for the purpose of preser-

vation, the final dilutions of the tuberculins used for test being such that, reckoned on the amount of O. T., 8 cc of the final product represented 1 cc of the original Koch tuberculin. Unadsorbed controls were reserved in each case and the potency of each product was tested by determining the toxicity for tuberculous guinea pigs and the ability to cause intradermic reactions in tuberculous guinea pigs.

The accompanying table illustrates the results obtained. A great many other tests have been made which in a general way confirm the results shown in the table. It is very evident that the active material of the tuberculin is adsorbed to a greater or less degree by all of the adsorbents employed except calcium carbonate. As the table shows, treatment with kieselguhr markedly reduced the potency of the tuberculin but did not completely remove it under the conditions of our experiments. On the other hand, the charcoal seemed to remove every vestige of active material. The accompanying photograph shows the intradermic reactions brought about in a tuberculous guinea pig by unfiltered tuberculin and by the same tuberculin previously mixed with kieselguhr and filtered.

It has been evident throughout our work that, as would be expected, the proportion of the adsorbent to the amount of the material to be adsorbed is a very important factor. In other words, although 15 grams of kieselguhr adsorbed practically all of the active material from 100 cc of culture fluid, representing 10 cc of old tuberculin, it would probably not, under the conditions of our experiments, adsorb all of the active material from 1,000 cc of culture fluid. We found, further, on repeated trials of Berkefeld filter candles, that the total amount of active substances adsorbed by the candles is comparatively small. In other words, if a large amount of strong tuberculin is filtered through a Berkefeld candle no noticeable effect upon the potency may be caused, whereas the effect might become very apparent if only a small amount of strong tuberculin or a fairly large amount of a very weak tuberculin were filtered through a similar candle. Our experiments indicate that filtration of tuberculin through infusorial earth filters will probably always reduce the potency of the tuberculin somewhat when fresh filters are used. This naturally leads to the conclusion that diatomaceous earth (kieselguhr) is not an ideal medium for the filtration of tuberculin, even though we know that, in large-scale production, the



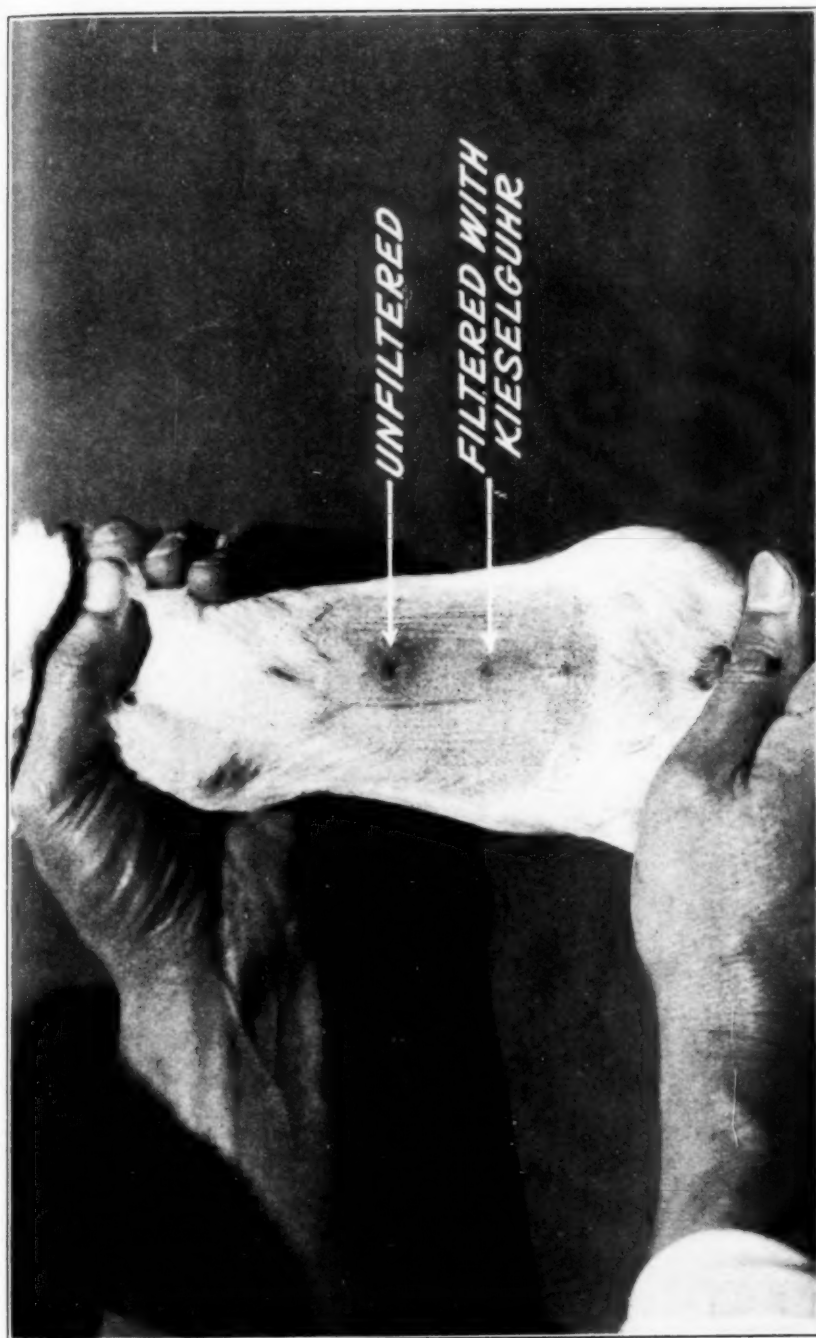


FIG. 1. Tuberculous guinea pig injected intradermally with tuberculin prepared from cultures on synthetic medium and with the same tuberculin after adsorption and filtration with kieselguhr.

loss of active constituents, as a result of such filtration is comparatively small.

So far as we are aware, adsorption of the active principle of tuberculin by diatomaceous earth and by Fuller's earth has not been previously studied. Several authors, however, have reported that charcoal does not adsorb it.<sup>1,2</sup> The only explanation we can offer of the very diverse results obtained by Long and Seibert on the one hand and by ourselves on the other, is

TABLE I—Adsorption of the active principle of tuberculin

TUBER- CULIN	ADSORBENT		TOXICITY TESTS						RESULTS OF INTRA- DERMIC TESTS <sup>1</sup>
					RESULTS				
	KIND	AMOUNT (Gms.)	DOSE (Gms. O.T.)	G. PIGS	DIED	STRONG REAC- TION	FAIR REAC- TION	SLIGHT OR NO REACTION	
Syn- thetic A pH 5.4	None		.0625	3	3	0	0	0	+++++
	Kiesel- guhr	15	"	"	0	0	1	2	+
	Cal- cium car- bonate	"	"	"	2	1	0	0	+++++
Syn- thetic A1 pH 9.4 <sup>2</sup>	None		.0625	3	1	0	2	0	++++
	Kiesel- guhr	15	"	"	0	0	3	0	—
	Cal- cium car- bonate	"	"	"	1	2	0	0	++++
Beef Bouillon B pH 6.0	None		.125	3	3	0	0	0	++++
	Kiesel- guhr	17	"	"	1	0	1	1	+
	Fuller's earth	"	"	"	0	0	2	1	—
Syn- thetic C pH 5.0	Char- coal		"	"	0	0	0	3	—
	None		.125	4	4	0	0	0	+++++
	Kiesel- guhr	12.7	"	"	0	0	4	0	+
	Fuller's earth	"	"	"	0	0	2	2	—
	Char- coal	"	"	"	0	0	0	4	—

<sup>1</sup>The dose used in the intradermic tests was 0.0125 gm. old tuberculin.

<sup>2</sup>Synthetic A, made slightly alkaline.

that the conditions in the two sets of experiments were probably quite different. In our work the adsorption of the active material by kieselguhr seemed to be more complete from the synthetic tuberculins than from those derived from bouillon cultures. Alteration of the reaction of the tuberculin, within certain limits, did not seem materially to affect adsorption.

Kramer<sup>3</sup> recently called attention to the very great effect which is exerted by the reaction of a filter upon the material to be filtered and has shown that certain dyes will pass through a filter, such as the Berkefeld, having a negative charge (acid), whereas they are withheld by filters of plaster of Paris having a positive charge (alkaline). Our own experiments have shown, so far as they have gone, as has been known for a very long time, that the reaction of the adsorbent itself is of much importance, and that the active constituents of tuberculin were adsorbed by substances having a negative charge while they were not adsorbed to any noticeable degree by calcium carbonate which carries a positive charge.

## REFERENCES

<sup>1</sup>Long & Seibert: *Jour. Amer. Med. Asso.*, lxxxv (1925), p. 650.

<sup>2</sup>Jousset: *Rev. Tuber.*, xi (1915), 5, p. 305.

<sup>3</sup>Kramer: *Jour. Gen. Physiol.*, ix (1926), 6, p. 811.

## BUREAU TRANSFERS

Dr. J. R. Brown, from Cairo, Ill., to St. Louis, Mo., on meat inspection.  
Dr. Carl T. Loy, from Chicago, Ill., to Omaha, Nebr., on meat inspection.  
Dr. Earl R. Fisher, from Sioux Falls, Iowa, to Omaha, Nebr., on meat inspection.

Dr. Harry C. Ingraham, from Sandpoint, Idaho, to Kansas City, Kans., on meat inspection.

Dr. Harry E. Wimer (K. C. V. C. '11), from Portland, Ore., to Sandpoint, Idaho, in charge meat inspection.

Dr. A. H. Julien (O. S. U. '10), from Chicago, Ill., to Portland, Ore., on meat inspection.

Dr. Ralph A. Parsons (Chi. '17), from Olympia, Wash., to Chicago, Ill., on meat inspection.

Dr. Harold J. Boyce (K. C. V. C. '17), from Kansas City, Kans., to Topeka, Kans., on virus-serum control.

Dr. Frank B. Jones (K. C. V. C. '11), from Harrisburg, Pa., to Topeka, Kans., on tuberculosis eradication.

Dr. Chas. H. Leavitt (Chi. '06), from Houston, Texas, to Tacoma, Wash., on meat inspection.

Dr. Wm. S. Trigg (Geo. Wash. '14), from Buffalo, N. Y., to National Stock Yards, Ill., on meat inspection.

Dr. W. J. Comstock, from Washington, D. C., to Buffalo, N. Y., on meat inspection.

Dr. Archibald McBride (Chi. '95), from Paterson, N. J., to Newark, N. J., on meat inspection.

Dr. J. R. Houchins (U. S. C. V. S. '17), from Raleigh, N. C., to Frankfort, Ky., on tuberculosis eradication.

## A PRACTICAL COLLAR FOR DOGS AND CATS\*

By J. G. HORNING, *Houston, Texas*

For some time the thought has been in our mind that the most practical collar for dogs and cats, from the standpoints of economy and sanitation, would be a collar made of silver or gold. A heavily nickeled collar of the same type could be used. However, from the standpoint of economy, the silver collar is preferable. This can be made only of silver links, the size of the links being regulated according to the size of the dog or cat. To it may be attached the name-plate, with the owner's name and address and the dog's license number engraved on it. This collar would last the lifetime of the owner and his heirs, if taken care of and not lost, whereas, the life of the average leather collar of today runs about six months and the cost runs from \$1.00 to \$3.50 or more. This makes the silver collar better from an economical standpoint.

A silver collar can be boiled and polished. Water will not phase it. If there is a possible chance of contamination, it can be sterilized. Water will ruin a leather collar and it is impractical to sterilize one. The leather collar will wear and rub the hair to a greater extent than would be possible with the silver collar. This same idea in the form of a silver chain could be used in manufacturing a harness for the dog. In fact the amount of decorations wanted on either collar or harness would be strictly up to the wishes and financial capacity of the purchaser. However, it is our belief that this suggestion is sound in every respect and should be endorsed by every veterinarian.

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### PRESS GLEANINGS

Mules that were fed *corn* and mixed hay, at the Missouri Agricultural Experiment Station, maintained their weight slightly better than mules fed *oats* and mixed hay.

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Compressed straw may partially supplant coal as a furnace fuel in the Middle West, says Prof. W. H. Sanders, of the Kansas State Agricultural College, who has been conducting experiments along this line recently.

\*Presented at the sixty-third annual meeting of the American Veterinary Medical Association, Lexington, Kentucky, August 17-20, 1926.

## CLINICAL AND CASE REPORTS

(Practitioners and others are invited to contribute to this department reports of unusual and interesting cases which may be helpful to others in the profession.)

### SUCCESSFUL REMOVAL OF OBSTRUCTING BONE FROM A DOG'S ESOPHAGUS BY MEANS OF THE ESOPHAGOSCOPE

By

E. B. KRUMBHAAR

*Philadelphia General Hospital, Philadelphia, Pa.*

and

GABRIEL TUCKER

*Bronchoscopic Clinic, University Hospital, Philadelphia, Pa.*

A valuable, pedigreed, Scottish Terrier bitch, thirteen months old, had always been in excellent health until December 21, when she was found to vomit everything she ate within a minute



FIG. 1. Bone fragments, food debris and grass removed from dog's esophagus with esophagoscope. Also two food-stained gauze swabs. Obstruction caused by bone designated by arrow.





FIG. 2. Roentgen ray of terrier, showing large bone (between brackets) causing esophageal obstruction. The bifurcation of the bronchi is designated by a dotted arrow; other bone fragments in the intestine by arrows; and a fecal mass containing bismuth, administered two weeks previously, by a cross.

or two of the time of eating. Thereafter, for fourteen days, the immediate vomiting continued as follows: When the dog became sufficiently hungry, she would gulp a small amount of food, but whether liquid or soft solid, it would at once cause discomfort and yelping, and be vomited unchanged but surrounded by much white froth. When this was eaten again it sometimes stayed down and sometimes was vomited. On the advice of a veterinarian who is a canine specialist, she was given milk of bismuth, milk of magnesia, mineral oil and an effective enema, with no change in her condition except increasing emaciation. Although not retaining more than an ounce of food per day, she continued

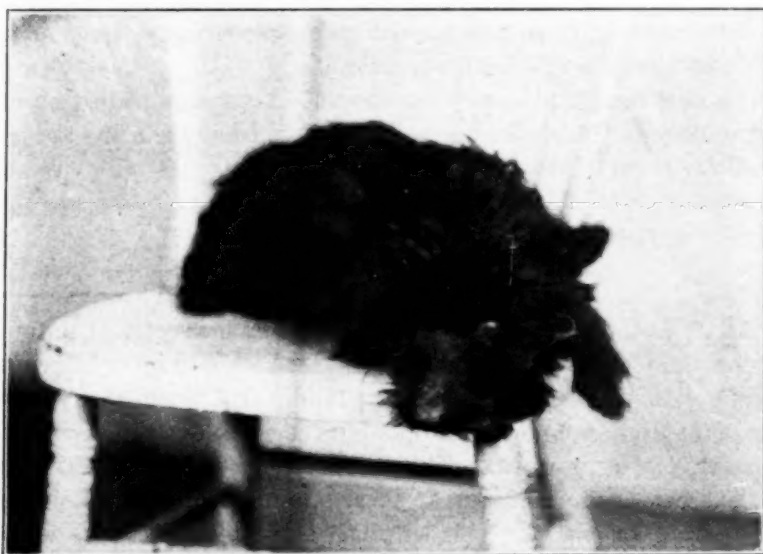


FIG. 3. The patient one hour after removal of obstructing bone. Still sleepy from the effect of one-half grain of morphin.

in good condition, and took a mile walk with enjoyment on the twelfth day. Next day a stomach-tube (rubber catheter, human) was passed almost certainly into the stomach, and water easily introduced, but none could be withdrawn. The conviction that there was an obstruction by a foreign body had now become so strong that on the owner's request, Dr. Pancoast, of the Hospital of the University of Pennsylvania, very kindly took a Roentgen-ray picture (fig. 2). This revealed a large cube of bone obstructing the esophagus in its lower third, also bits of bone in the relatively collapsed intestines.

An hour after the administration of morphin, gr.  $\frac{1}{2}$  and atropin, gr.  $\frac{1}{150}$ , the dog was very drowsy and was placed

on a dog operating-table in the usual position for esophagoscopy.

The esophagoscope, introduced without the slightest difficulty or discomfort, at once revealed the obstructing bone surrounded by food debris. After the debris had been removed, still without any apparent discomfort to the patient, attempt was made to remove the large piece of bone. This was made more difficult by the crumbling off of small pieces of the spongy bone and the accumulation of mucus. Eventually, however, the large fragment was moved in several attempts. With each move, the dog gave low cries, which were the only evidence of its discomfort during the entire procedure. The bone having been removed, the esophagoscope was passed without difficulty into the stomach and no abnormalities noted, except slight ulceration at the site of the obstruction.

The dog remained dopey for several hours, not wanting food, but took some broth during the night, and has been in excellent condition ever since.

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### KIDNEY WORM IN MAMMARY GLAND

By C. A. CARY, Auburn, Ala.

Dr. J. S. Cook, of Union Springs, Alabama, received a hound bitch from Choctaw County, Alabama, which had an enlargement of the left posterior mammary gland. He decided it was a tumor or abscess and, upon opening the enlarged gland, out of it came a very large worm. This worm was sent to the Veterinary College here and was found to be *Dioclophyme renale* (*Eustrongylus vicalis* or *gigas*.) This worm is usually found in the kidney or abdomen of dogs. As far as I know, this is the only instance where it has been found in the mammary gland.

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### VISITORS AT THE JOURNAL OFFICE

The following veterinarians have paid their respects at the JOURNAL office during recent months: Dean Veranus A. Moore, of Ithaca, N. Y.; Dr. J. P. Bushong, of Los Angeles, Calif.; Dr. Thomas Kelly, of Philadelphia, Pa.; Dr. Harry Caldwell, of Wheaton, Ill.; Dr. C. H. Schultz, of Chicago, Ill.; Dr. Hilborn H. Groat, of Chicago, Ill.; Dr. H. H. Sparhawk, of Howell, Mich.; Dr. Thomas B. Burriss, of Pasadena, Calif.; Dr. Otto Bederke, of Berlin, Germany; Dr. B. J. Killham, of Lansing, Mich.; Dr. A. S. Schlingman, Dr. E. P. Schaffter, Dr. John Hoberg, and Dr. Joseph Hawkins, all of Detroit.

## REVIEW

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DISEASES OF ANIMALS IN RELATION TO MAN. T. W. M. Cameron, M.A., B.Sc., Ph.D., M.R.C.V.S. London School of Hygiene and Tropical Medicine. 222 pages with 13 figures in the text. Faber and Gwyer, Ltd. (The Scientific Press), London, 1926. Cloth, 3s. 6d.

This little book is the seventh of a series—The Modern Health Books. The real purpose of the book is revealed in a sentence taken from the author's preface: "Some of the most virulent of human diseases arise in the lower animals; and it is only because of a strict veterinary service that civilized humanity is kept free from these ills." The author believes that everybody should be familiar with the possibilities of danger to health "which may accrue from the association with the lower creation." This is done tactfully, however, and it is safe to say that no one who reads the book will develop any repugnance for animals. The author states that "a study of animal disease, not so much for the sake of the animal as for the sake of man himself, is accordingly of great importance in human medicine." This is a fact that too generally goes unappreciated by the general public.

Considerable space is given to tuberculosis, but not more than the subject merits. Anthrax, glanders, rabies, cow pox, foot-and-mouth disease, undulant fever and infectious abortion, animal parasites and fungi, the diseases transmitted by milk, tetanus and gas gangrene, cancer, meat and meat poisoning are subjects thoroughly covered by the author. Where there is a treatment for a disease, reference is made to it, but there is no suggestion that any attempt should be made to treat any of these diseases by laymen. This is plainly the function of the professionally trained. There are certain differences in the manner of handling some of these diseases in the United States and Great Britain, and the reader must keep this fact in mind as he progresses through the book. In the preparation of this book the author has faced a none-too-easy task, but he has acquitted himself admirably.

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It is stated on good authority that the best way to get permission to keep a puppy in a flat is to name him after the janitor.

## ABSTRACTS

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STARLINGS AS DISTRIBUTORS OF "GAPES." E. Aneurin Lewis.  
Jour. Helminth., iv (1926), 2, pp. 43-48.

Following examination of the wind-pipes of rooks, thrushes, jays and starlings (1925) the author was of the opinion that not sufficient importance was attached to starlings, especially, in relation to the spreading of "gapes" among chickens. During four months (November, 1925, to February, 1926) 482 starlings were examined. Of these 169, or 35 per cent, were found to harbor *Syngamus trachealis*.

In certain portions of Wales gapes is common in chickens during March, April and May. It also occurs in chicks hatched during June, July and August, but on account of the gradual decrease in numbers of chicks hatched during these months the disease is not so prevalent as in the earlier months. The parasites are also common in young turkeys during May and June and it is known that the gapeworm is common in adult turkeys and pheasants throughout the year.

It is thought that the adult starlings, turkeys and pheasants infected with *S. trachealis* act as a bridge between the period of possible infection of chickens from one year to another and thus keep up a connected period for the propagation and distribution of *S. trachealis*.

On account of the migratory habits of the starling, it is thought that these infested birds are responsible for many of the sudden outbreaks of gapes which occur in chickens. Other wild birds, such as pheasants, thrushes, rooks and jays, also play an important part in spreading the gapeworm and the disease caused by it.

S. S.

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A PRELIMINARY SURVEY OF THE NEMATODE AND CESTODE PARASITES OF SHEEP IN NORTH WALES, OCTOBER, 1923, TO SEPTEMBER, 1924. W. N. Jones. Jour. Helminth., iv (1926), 1, pp. 31-35.

In an effort to ascertain the distribution and relative abundance of the more common parasitic worms inhabiting the alimentary canal of sheep in North Wales, postmortem examinations were made on 1216 sheep, including ewes, wethers and lambs.



The following species were obtained: *Monezia expansa*, *M. planissima*, *M. alba*, *Ascaris ovis*, *Monodontus trigonocephalus*, *Esophagostomum venulosum* and *Trichuris ovis*.

Intestinal parasites were obtained from 1147 out of 1216 sheep examined (96 per cent), only 69 sheep being apparently free.

S. S.

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A FURTHER SURVEY OF THE NEMATODE AND CESTODE PARASITES OF SHEEP, PIGS AND CATTLE IN NORTH WALES, OCTOBER, 1924, TO SEPTEMBER, 1925. W. N. Jones. Jour. Helminth., iv (1926), 1, pp. 36-42.

Continuing a previous work to determine the prevalence of intestinal parasites of animals in North Wales, the author made postmortem examinations of 160 sheep, 15 cattle and 19 pigs.

Five further species of parasites in sheep were found, namely: *Cooperia oncophora*, *Cooperia curticei*, *Trichostrongylus vitrinus*, *Ostertagia trifurcata* and *Chabertia ovina*. These were of only occasional occurrence, being generally present in small numbers.

Twenty of the 160 sheep were free from any parasitic infestation.

The author is of the opinion that the age of the sheep determines largely what parasites are present and that there is apparently no direct relationship between the presence of parasites and the condition of the host for commercial purposes.

The results of the examination of the fifteen cattle were entirely negative.

The most prevalent species of parasite removed from the 19 pigs examined was *Ascaris lumbricoides*, which is of common occurrence and has a general distribution in North Wales. Nine of the pigs examined had no ascarids. *Esophagostomum dentatum* and *Trichuris suis* were found in two cases.

S. S.

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ON THE ASCARIS FROM SHEEP. T. Goodey. Jour. Helminth., iv (1926), 1, pp. 1-6.

Worms belonging to the genus *Ascaris* occur occasionally in the small intestines of sheep and lambs and have been reported in Europe and America. They have been considered by some to belong to a distinct species, namely, *Ascaris ovis* Rudolphi, and by others to be identical with *Ascaris lumbricoides* Linnaeus.

From the examination of numerous adult ascarids obtained from sheep at a London abattoir and comparison with male and

female worms described by Neumann (1884) as *Ascaris ovis*, the author is of the opinion that the *Ascaris* of sheep is also *A. lumbricoides*. The list of hosts for this parasite at the present time, therefore, is as follows: man, chimpanzee, orang-outang, pig, sheep, cattle and squirrel.

S. S.

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ON THE MORPHOLOGY OF THE ADULTS AND THE FREE-LIVING LARVAE OF *Dictyocaulus arnfeldi*, THE LUNG-WORM OF EQUINES. Thomas W. M. Cameron. Jour. Helminth., iv (1926), 2, pp. 61-68.

This parasite was first reported by Cobbold, in 1882, from a donkey, and described by him two years later under the name of *Strongylus arnfeldi*. The morphology of this parasite has never been completely described, while the life history has been almost entirely uninvestigated.

Included in this work are descriptions of the anatomy of the adult worms and of the free-living larval stages. The descriptions are based on the study of live material obtained from the lungs of a donkey killed in London.

S. S.

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CARBON TETRACHLORIDE IN LIVER ROT OF SHEEP. R. F. Montgomerie. Jour. Comp. Path. & Therap., xxxix (1926), 2, pp. 113-131.

Experiments with 172 sheep showing clinical evidence of infestation with liver flukes indicated that pure carbon tetrachlorid has a reliable anthelmintic action towards the mature liver flukes. A single administration of 1 cc of carbon tetrachlorid in soft gelatin capsules was found to be sufficient to destroy the mature flukes in sheep weighing up to 140 pounds. The efficiency of this amount of the anthelmintic was not reduced by lack of preparation of the animal by starvation. The dose used did not destroy immature flukes infesting certain of the subjects at the time of treatment. No evidence of toxic action of the drug was observed in any case.

S. S.

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In all the great changes in country life and in farming the home remains and is essentially the same as in other years. That is the greatest and most important fact in agriculture.

—*The New York Times*.

## PUBLICATIONS RECEIVED

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- Cornell University Official Publication, Announcement of the New York State Veterinary College, 1926-27. Ithaca, N. Y., March 15, 1926. pp. 32.
- A Comparison of the Blood of a Normal and Two Castrated Billy Goats. Pierre A. Fish and Charles E. Hayden. Ithaca, N. Y. Reprint from *Cornell Veterinarian*, April, 1926. pp. 6.
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- Medical Periodicals from the Library Standpoint. Charles Frankenberger. Brooklyn, N. Y. Reprint from *Journal of the American Medical Association* lxxxvii (1926), pp. 612-614. pp. 9.
- Phylacogens (Veterinary). (Parke, Davis & Co. Veterinary Bul. 417, Detroit, Mich. pp. 14. Illustrated.)
- The Laboratory in the Service of Medicine. (The Dermatological Research Laboratories, Philadelphia, Pa., 1926. pp. 28. Illustrated.)
- Sixth Report of the California Department of Agriculture for the Period ending December 31, 1925. Sacramento, Calif., 1926. pp. 336. Illustrated.
- College of Veterinary Medicine, (Announcement) 1926-1927. (Ohio State Univ. Bul., xxx (1926), 9. Columbus, Ohio. pp. 49.)

## ARMY VETERINARY SERVICE

### CHANGES RELATIVE TO VETERINARY OFFICERS

#### Regular Army

Second Lieutenant Lewis E. Schweizer is relieved from duty as student at the Army Veterinary School, Washington, D. C., effective in time to comply with orders and directed to sail for the Philippine Islands on March 8, 1927.

First Lieutenant Jack G. Fuller is assigned to duty as student at the Army Veterinary School, Washington, D. C., effective upon completion of his present tour of foreign service in the Philippine Islands.

Captain James E. Noonan is relieved from observation and treatment at the Walter Reed General Hospital and directed to report to Fort Ethan Allen, Vermont, for duty.

Captain Ralph B. Stewart is relieved from duty in the Surgeon General's Office, Washington, D. C., on or about November 15, 1926, and will report for temporary duty to the Commandant, Army Veterinary School until January 13, 1927, and to the Commandant, Medical Field Service School, Carlisle Barracks, Pa., for temporary duty with the 1st Medical Regiment until June 1, 1927, and then report to the Commanding General, Fort Riley, Ks., for duty.

#### Reserve Corps

##### *New Acceptances*

##### *Captains:*

Lash, Elmer.....5 Leland Street, Chevy Chase, Md.

Policoff, Wm. Wolfe.....295 Main St., Wilkes-Barre, Pa.

##### *Second Lieutenants:*

Exconde, Irineo I.....San Pablo, Laguna, P. I.

Frank, Edward Raymond....1024 Laramie, Manhattan, Ks.

Hines, Laurence I.....Spencer, Neb.

ter Kuile, Roger C.....Grand Ave., Montvale, N. J.

##### *Promotions*

Kneup, Frederick, Geo., 613 Main Avenue, Elmwood Place, Ohio—to Major.  
Hendren, Samuel Groff, 143 Shaw Avenue, Lewistown, Pa.—to Captain.

##### *Separations*

Kidwell, Wilbur Ross, Capt., Resigned.

Parrish, Guy M., 2nd Lt., Declined reappointment.

Smith, R. E., 2nd Lt., Failed to accept reappointment.

### FOUR MAJORS LOST AND FOUND

In the short article, "Veterinarians at Carlisle Barracks," published in this department in October (p. 44) the names of four majors in the group were inadvertently omitted. They are: Major C. H. Hoffmire (O. S. U. '08), Continental, Ohio; Major H. D. Martien (U. P. '96), Philadelphia, Pa.; Major Aaron Silkman, Golden Bridge, N. Y.; and Major R. S. Sugg (A. P. I. '15), Auburn, Ala.

Petaluma, Calif., has a chicken pharmacy, said to be the only store of its kind in the world, selling medicines and remedies for fowls only.

## MISCELLANEOUS

### A VEST POCKET ESSAY ON FOOTBALL

*By I. K. ATHERTON, College Park, Md.*

Football is an alleged game which is not played with a ball after all, but with an inflated, elliptical piece of cowhide, alias pigskin. Owing to the high price of leather, the ball is never kicked, but carried lovingly in the arms and, for this reason, the game might appropriately be called armball. It is played with eleven men, a coach and a publicity agent on each side. The coach is noted for his kindness and consideration of the players' feelings, and never reminds a player of his faults, except in the most chosen language, but the choosing is not from a book on etiquette. The publicity agent is the bird who sends out bear stories from the training-camp, and provides the alibi after the games. The most delightful part of the pastime for the athletes is the training-table. There they are stuffed with carefully selected brawn- and muscle-forming foods, until they gain the proverbial "pound a day." For some unexplainable reason, celery, fish, oysters and other brain foods are taboo. It has been apparent at times, however, that to balance the ration with some stimulus for the gray matter would be a good investment. The game is much different from tatting or ping-pong. For, while the nerve-racking features of these forms of athletics have been eliminated, the violence of both has been retained. A football player arrayed for action is just about as attractive as a farm tractor and, after being walked over by the opposing team a couple of times, is about as companionable as a wild bull.

About the only similarity to football that is found among the fall games in the hog-lot is the training-table. When careful observance is given to the quality and quantity of the food, the owner has a fine bunch of hogs to dispose of at slaughtering time. On the contrary, we have many owners of swine who do not appreciate the necessity for careful observance of the food which reaches the hogs, and not frequently they are given feed which produces disease. Of the last 100 new outbreaks of cholera which have been reported in Maryland, 98 have been due to the owners feeding the hogs garbage, table scraps, or kitchen swill which contained bones, rinds or scraps of pork. The results will be heavy losses which could easily have been prevented by careful



attention to the food which reached the animals. Until owners are willing to use care in this particular, they will continue to pay toll of that dread disease—hog cholera.

### VERMONT ENDURANCE RIDE

Miss Brandon won the 1926 Vermont Endurance Ride, held at Brandon, Vt., October 11-15. Miss Brandon belongs to the Third Cavalry Service Troop and was ridden by Sergeant Samuel J. Mathison, who was awarded the prize of \$100 for horsemanship, as well as the prize of an equal amount going to the rider who brought his horse home in the best condition. The Mounted Service Cup became the permanent property of the Third Cavalry, as the result of Miss Brandon's success this year. Announcement of the awards was made by Dr. Paul Moody, president of Middlebury College, who pointed out that these endurance rides are not so much sporting events as they are demonstrations of patriotic service. Seventeen mounts were originally entered, but only fourteen started the ride. Twelve horses finished the second day. Only eight horses were left by the morning of the fourth day.

The following table gives the names, points and other information concerning the six place-winners, all being grade Thoroughbreds except Rex Rysdyk, a standard-bred.

NAME	ENTERED BY	COLOR & SEX	ORIG. WEIGHT	FINAL WEIGHT	POINTS		
					TIME	COND.	TOTAL
Miss Brandon	Service Troop						
	U. S. Cavalry	b.m.	930	895	40	59	99
Stockings	Third U. S.						
	Cavalry	b.g.	1075	1020	40	54	94
Rex Rysdyk	R.T. McCready	d.g.	925	890	40	53	93
Peggy	Troop F.						
	U. S. Cavalry	b.m.	1010	995	40	51	91
Bunny Boy	Third U. S.						
	Cavalry	b.g.	1005	965	40	44	84
Lillian Russell	Capt. J.A. Weeks	ch.m.	1080	1060	40	40	80

Dr. L. H. Adams, of Montpelier, Vt., was official veterinarian, assisted by Dr. Herman Philipsen, of Brandon.

### VETERINARY FRATERNITY IN NEW QUARTERS

Epsilon Chapter of Alpha Psi Fraternity, at the University of Pennsylvania School of Veterinary Medicine, recently moved into more spacious and pleasant quarters at 3913 Woodland

Avenue, West Philadelphia. The new house has been completely and attractively refurnished and makes a very desirable home for the members of the Chapter. There are sleeping quarters for nineteen men, with room to spare, so that alumni members, as well as Alpha Psi men from other chapters, can count on being accommodated with sleeping quarters whenever visiting in Philadelphia.

Epsilon Chapter was organized in 1908, as the fifth chapter in the fraternity. Since that time the Chapter has struggled through several periods of serious depression, but, during the past four years, material progress has been steadily made, largely through the untiring efforts of Dr. E. T. Booth, a member of the faculty and trustee. The alumni members have been kept in touch with the needs of the Chapter and largely through the help of loyal alumni the Chapter is now on a very stable financial footing.



Epsilon Chapter House, Alpha Psi Fraternity

By means of various social functions and other activities during the year, a splendid feeling of good fellowship has been maintained between the students and faculty. The existence of the fraternity has been quite a stimulus to the social life of the veterinary students. Through generous gifts upon the part of alumni and faculty members, the shelves of the library and reading-room are gradually being filled and the members have convenient access at all times to a comprehensive library, as well as a considerable number of scientific periodicals.

Members of the fraternity are invited to visit the members of Epsilon Chapter in their new home whenever they are in Philadelphia.

## COMMUNICATIONS

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### ONE OF MANY

TO THE EDITOR:

Enclosed find check for \$5.00 in payment of my dues in the A. V. M. A. for year of 1927. Was unable to be with you at Lexington, but expect to be at Philadelphia next year.

With best personal regards and an appreciation for the good things the A. V. M. A. is doing for the profession, I am

M. J. JONES.

*Harrisburg, Ohio, Nov. 10, 1926.*

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### SICK AND DISGUSTED

TO THE EDITOR:

I am enclosing my check for annual dues and, incidentally, I want to thank you for the stand that you have taken on the commercializing of the veterinary profession by acting as agents for mineral mixtures. I do not feel that the letter written by Dr. Koen and published in the last issue of the JOURNAL is endorsed by veterinarians, the majority of whom are sick and disgusted by the effort to use the veterinary profession and their journals and meetings as sales agents.

A. F. NELSON.

*Thorntown, Ind., Nov. 18, 1926.*

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### VETERINARY FRATERNITY TOPS LIST

Alpha Chapter of Alpha Psi Fraternity stood highest among the professional fraternities at Ohio State University last year, according to the announcement made at the annual scholarship night held in the Ohio State University Chapel recently. There were eleven other professional fraternities competing for the honor. Kappa Psi, a fraternity composed of pharmacy students, gained second place and Omega Tau Sigma, another veterinary fraternity, was awarded third place in the standing.

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Farming is no more a God-given right than pulling teeth or selling automobiles. If a farmer cannot compete on a reasonable basis, he should get out and go into something else.

—E. T. Meredith.

## BIBLIOGRAPHY ON BOVINE INFECTIOUS ABORTION FOR 1925

*Note.* The abortion problem is not disappearing, nor is interest in the problem waning. Nearly twice as many references to the literature are available for 1925 as were listed for 1924 (Jour. A. V. M. A., Nov., 1925). The new information concerning the possible relationship of *Bacterium abortus* to *Micrococcus melitensis* and to undulant (Malta) fever makes it necessary to list references to Malta fever in a bibliography of cattle abortion. It is difficult to determine what to exclude.

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East Lansing, Michigan.

WARD GILTNER.

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## DISINFECTING HONEYCOMB

Honeycomb in a hive afflicted with the ancient bee disease, foulbrood, can be disinfected and used over again, just as health officers fumigate a house where there has been a case of diphtheria. The bee disease, which attacks the young bee larvae and causes great losses to the bee-keeping industry, was known as far back as the days of Aristotle. Formerly, in order to make sure of checking its spread, the bee-keeper had to destroy all the infected combs and hives by fire. Now, however, experts at the University of California Agricultural Experiment Station have found that an easily prepared solution of soap, water and formalin is a cheap and effective agent that will sterilize even the interstices of the hexagonal cells of honeycomb.

—Science.



## ASSOCIATION MEETINGS

### PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION

The forty-fourth annual meeting of the Pennsylvania State Veterinary Medical Association was held at Philadelphia, September 15-16, 1926, with headquarters at the University of Pennsylvania School of Veterinary Medicine. The meeting was well attended and the members enthusiastic over the program.

The meeting was called to order promptly, Wednesday morning, by Dr. F. U. Fernsler, president, of Lebanon. After the regular business was transacted the following committees made their reports:

Medicine and Surgery—Dr. V. G. Kimball, chairman.

Hygiene—Dr. L. A. Klein, chairman.

Legislation—Dr. C. W. Boyd, chairman.

Horse Association of America—Dr. H. E. Bender, chairman.

Allied Agricultural Associations—Dr. T. E. Munce, chairman.

State Council of Agricultural Associations of Pennsylvania—Dr. W. Albertson Haines, chairman.

Committee on Live Stock and Poultry Industries—Dr. G. A. Dick, chairman.

Local Arrangements Keystone Veterinary Club—Dr. C. S. Rockwell, chairman.

Philadelphia 1927 A. V. M. A. Convention Committee—Dr. T. E. Munce, chairman.

Dr. Munce reported that the invitation for the A. V. M. A. to meet in Philadelphia in 1927 was extended at the meeting at Lexington, in August, and unanimously accepted. He moved that the report be accepted, the committee discharged, and that Dr. C. J. Marshall be recommended to President Thomas A. Sigler, for chairman of the Local Committee on Arrangements. The motion was unanimously adopted.

Reports were next received from the various veterinary clubs located throughout the State.

Dr. Timothy P. White, of the federal Bureau of Animal Industry, gave a splendid review of the hog cholera situation throughout the country. The meeting then adjourned for lunch.

The first speaker on the program for the afternoon was Dr. Edward Lodholz, Isaac Ott Professor of Physiology in the University of Pennsylvania Graduate School of Medicine. His subject was "The Physiology of Acquired Behavior in Our Domesticated Animals." The lecture was illustrated with lantern-slides.

Dr. D. H. Udall, of the New York State Veterinary College, Cornell University, next gave a very interesting paper on the subject of "Prevention and Treatment of Diseases of the New-born." Dr. Udall emphasized the importance of feeding, and indicated that most calf troubles are due to overfeeding. He advised the use of muzzles for calves that are sick, to prevent them from eating coarse material, such as bedding.

The Board of Trustees then presented their report. This was followed by the election of officers, with the following results: President, Dr. W. Albertson Haines, Bristol; 1st vice-president, Dr. Walter G. White, Lansdowne; 2nd vice-president, Dr. Frank



DR. W. A. HAINES

J. McNeal, Wilkes-Barre; 3rd vice-president, Dr. M. P. Hendrick, Meadville; recording secretary, Dr. George A. Dick, Philadelphia; corresponding secretary, Dr. H. R. Church, Harrisburg; treasurer, Dr. D. R. Kohler, Boyertown; trustees, Drs. F. U. Fernsler, Lebanon; R. W. Keepers, Greencastle; E. P. Althouse, Sunbury; P. K. Jones, Pittsburgh; H. B. Cox, Philadelphia.

On Thursday morning the meeting was called to order by the President, about ten o'clock.

Dr. Frank Hare, poultry pathologist of the Delaware State Board of Agriculture, was the first on the program. His subject

was "Common Diseases of Poultry." Among other interesting facts he said that tuberculosis of poultry has not been found in Delaware.

The members then attended the small-animal clinic in charge of Dr. W. J. Lentz. Several interesting cases were on hand and all enjoyed Dr. Lentz's discussion.

One of the most interesting numbers on the program was the Cesarean operation on a sow, by Dr. A. R. Pottgeiger. This demonstration could be repeated with profit at another meeting.

Another very interesting and much appreciated demonstration was the caponizing operation by Alvin Vansant, who acted in the absence of his father, Dr. Joseph W. Vansant. The new technic for the operation, as described in the October, 1926, number of the University of Pennsylvania Veterinary Extension *Bulletin*, was skillfully demonstrated. This also should be repeated at another meeting.

Dr. R. O. Biltz, of the Pennsylvania Bureau of Animal Industry, was next on the program. He demonstrated methods of procuring and submitting blood samples for the bacillary white diarrhea test.

After lunch, Dr. Franz Benesch, of Vienna, Austria, demonstrated local anesthesia in obstetrical work and in diseases of the genital organs, and a new wire-saw instrument used in veterinary obstetrics.

Several clinical cases of considerable interest were presented by Drs. W. J. Lee and V. G. Kimball, which carried the meeting to a rather late hour.

G. A. DICK, *Recording Secretary*.

### NORTHEASTERN PENNSYLVANIA VETERINARY MEDICAL CLUB

The Northeastern Pennsylvania Veterinary Medical Club met at Hotel Wyalusing, Wyalusing, October 22, 1926. Dr. W. J. Lentz, of the School of Veterinary Medicine, University of Pennsylvania, gave a lecture on "Embryology." Dr. Lentz brought out many points of interest along this line, which was of much benefit to the veterinarians who were present. Along with the talk given by Dr. Lentz, Dr. H. R. Church, Deputy State Veterinarian, gave a talk on tuberculosis of cattle, hog cholera, foot-and-mouth disease, contagious abortion and white diarrhea.

of chickens. Both talks were highly interesting and enjoyed by a very large attendance.

Mrs. N. H. Allis and daughters, of Wyalusing, entertained the ladies.

THOS. D. JAMES, *Secretary.*

### LAKE STATES TUBERCULOSIS CONFERENCE

The second annual Lake States Conference on the Eradication of Tuberculosis in Live Stock was held in the House of Representatives, State Capitol, Columbus, Ohio, October 18-19, 1926. The conference was conducted under the auspices of the live stock sanitary officials of the states of Wisconsin, Michigan, Illinois, Indiana, Ohio, Kentucky, Tennessee and West Virginia and the Bureau of Animal Industry, U. S. Department of Agriculture, Division of Animal Industry, Ohio Department of Agriculture, Ohio State Veterinary Medical Association and the Northwestern Ohio Veterinary Medical Association.

A happy choice was made in selecting the place for the meeting. It would be difficult to conceive of equipment and facilities better suited or more comfortable. The program included thirty-eight papers and, although crowded, was conducted in a very able manner. The deviations from the printed program were remarkably few and the time schedule was followed closely throughout the meeting.

The conference was called to order by Dr. F. A. Zimmer, the permanent chairman, who ably and clearly outlined the purpose of the conference and prepared the way for the events to follow. Honorable A. V. Donahey, Governor of Ohio, who was to give the address of welcome, was prevented from attending the meeting by illness, but he was ably represented by his private secretary, who delivered a short but pleasing address and assured the members in attendance at the conference of the Governor's entire sympathy with the work and projects under discussion. The response to the welcoming address was delivered by Dr. J. E. Gibson, federal inspector-in-charge for Indiana. Dr. Gibson early justified his selection for this prominent place on the program and his address may be considered as having met, if not exceeded, the high oratorical standard which he has set.

The first paper on the program, "Tuberculosis Eradication from National Standpoint," was presented by Dr. J. A. Kiernan, chief of the Tuberculosis Eradication Division, Bureau of Animal

Industry, and was given in Dr. Kiernan's characteristic forceful manner, clearly indicating the progress that has been made and the present status of the work. A number of charts were used to illustrate activities in connection with different phases of the project.

Dr. Kiernan was followed by Dr. A. J. DeFossett, federal inspector-in-charge for Ohio, who discussed the tuberculosis campaign in the Buckeye State. When Dr. DeFossett started his discussion, a cleverly-arranged, electrically-equipped map was revealed on the back wall. It showed by the means of intermittent colored lights the progress that had been made in the Ohio eradication work. Ohio certainly is to be congratulated upon the advancement indicated; particularly in view of the fact that suitable legislation was passed less than two years ago.

The remainder of the first morning period was devoted to a discussion of the application of the tuberculin test. The ophthalmic method was considered, but the major portion of the remarks was devoted to the intradermic test, which is so widely used in the eradication work. The subject was presented by Dr. W. H. McKenzie, federal veterinary inspector, located in Columbus, Ohio, and was discussed by Dr. H. M. O'Rear, inspector-in-charge, Nashville, Tennessee, and Dr. E. E. Moriarty, field veterinarian for the Ohio Division of Animal Industry. This part of the program was of great interest to the large number of field veterinarians present. Dr. O'Rear's method of reinjecting animals showing slight deviations, and at the same time introducing 6 to 8 cc of intradermic tuberculin subcutaneously, caused considerable post-meeting discussion.

The presiding officer for the Monday afternoon meeting was Dr. J. A. Kiernan, who first introduced Honorable Charles V. Truax, director of the Ohio Department of Agriculture. Mr. Truax presented an excellent paper on the "Importance of Tuberculosis Eradication to the Live Stock Industry." He left no doubt as to the attitude of his department regarding tuberculosis in live stock and its eradication.

The next speaker was Dr. E. C. Schroeder, superintendent of the U. S. Experiment Station, at Bethesda, Maryland. Dr. Schroeder reported tests concerning tuberculosis cures and immunizing agents in his customary efficient manner. The decision relative to tuberculosis cures was not favorable. Calmette's immunizing agent was reported as having demonstrated some protective ability, if administered prior to the advent of



disease-producing bacilli, but its universal application was not deemed advisable, even though much of the virtue claimed was demonstrated.

One of the high lights of the conference was the address on "Bovine Tuberculosis in Humans," presented by Dr. D. C. Lohead, of the Mayo Clinic, Rochester, Minnesota. This paper provoked many favorable comments and its reproduction will undoubtedly be widely read with great interest by veterinarians. Dr. Lohead devoted some time to the subject of pasteurization. He emphasized the need for "proper officials, proper individuals and proper machinery" in connection with "proper pasteurization" and concluded his remarks in this connection with the statement: "In any event, pasteurization is hard to accomplish with a small, local milk market and we must remember that over fifty per cent of the population of the United States live in rural districts, farms or communities under twenty-five hundred, and there too occur sixty per cent of the births."

Dr. Lohead was succeeded by Dr. C. O. Probst, president of the Ohio Public Health Association, who discussed "The Importance of Bovine Tuberculosis in Public Health." This was an excellent presentation by a person who has been in touch with public health programs in Ohio for many years.

Dr. Marion Dorset, who was to tell about his studies of tuberculin, was unable to attend the conference owing to illness in his family. Dr. Dorset's absence was keenly regretted.

The afternoon program was concluded by Dr. L. L. Rummel, field editor of the *Ohio Farmer*, who in a rapid-fire, snappy discourse told of an agricultural editor's impression of the tuberculosis campaign. We were thankful that Mr. Rummel was on the right side.

The evening session was started promptly under the guidance of the presiding officer, Dr. O. V. Brumley, of the Ohio State University, who introduced as the first speaker his chief, Dr. David S. White. The presentation by Dr. White was true to form and was replete with reminiscences and suggestions; the latter including not only the veterinarian as produced by the educational institution and school of experience, but also relating to facilities and equipment for teaching, and types of instructors.

Mr. R. B. Thompson, editor of the *Farm and Dairy*, Salem, Ohio, gave his observation of the tuberculosis campaign and his

remarks further emphasized the splendid support given to the campaign by the Ohio agricultural press.

Professor Oscar Erf, Department of Dairying, Ohio State University, was next introduced and he presented some carefully compiled data which indicated that the presence of bovine tuberculosis actually reduced farm and dairy profits.

The last speaker of the day, Dr. T. A. Sigler, president of the American Veterinary Medical Association, was given a rousing welcome to the platform. The address relating to the national association which followed was all that was anticipated and served to convince the veterinarians present that the A. V. M. A. had, as usual, chosen its chief executive wisely.

The Tuesday morning session was called to order promptly by Dr. P. T. Engard, president of the Ohio State Veterinary Medical Association.

The first speaker, Dr. F. H. Brown, state veterinarian of Indiana, outlined the tuberculosis campaign in the Hoosier State. He was followed by Dr. B. J. Killham, state veterinarian of Michigan, who demonstrated the progress of tuberculosis eradication in his state.

"Why Farm Organizations Assist in Tuberculosis Eradication" was then explained by Mr. L. B. Palmer, president of the Ohio Farm Bureau Federation. Mr. Palmer dispelled any doubt as to the attitude of the Farm Bureau in this connection.

The problems of the county veterinarian were next discussed by Dr. R. S. Smiley, county veterinarian of Preble County, Ohio, in his paper "The County Veterinarian's Problems in Tuberculosis Eradication." Dr. Smiley's excellent effort was well received and expressions of regret were offered because more of the field operators did not have an opportunity to discuss their problems.

Dr. Engard next introduced Dr. E. T. Faulder, director of the Bureau of Animal Industry, Albany, New York. Dr. Faulder was very successful in convincing his audience of the enormity of the task confronting the New York officials, but it was evident from the enormous sums mentioned that the work was not being hampered by a lack of funds.

Dr. Frank L. Carr, practitioner, of Alliance, Ohio, who was in the midst of the eradication fight staged in northeastern Ohio, told what the accredited veterinarian could do to assist in tuberculosis eradication. The position assumed by men of Dr. Carr's

type is certainly encouraging to the tuberculosis eradication workers.

The last speakers on the morning program devoted their remarks to avian tuberculosis. Dr. Robert Graham, of the University of Illinois, in his report of investigations in avian tuberculosis, presented one of the most interesting papers of the conference. The data submitted indicated that avian tuberculosis is transmissible to cattle, and that tuberculous chicks are capable of transmitting the disease acquired from infected eggs.

Professor H. R. Smith discussed some practical methods of eliminating avian tuberculosis and emphasized the necessity for action in this connection, particularly in view of the large amount of avian tuberculosis demonstrated in hogs originating in modified accredited areas.

The concluding session was opened by Dr. A. E. Wight, assistant chief of the federal Tuberculosis Eradication Division, as presiding officer.

Dr. T. S. Rich, federal inspector-in-charge for Michigan, whose name did not appear upon the program, was called to the platform to discuss his plan for tuberculosis-free farms. This plan is now in operation on 25 farms in Hillsdale County, Michigan, and includes the eradication of tuberculosis from swine and poultry in addition to the cattle.

Two state veterinarians, Dr. F. A. Laird of Illinois, and Dr. D. E. Westmorland of Kentucky, read short papers relating to the eradication work in their states. Dr. C. C. Dobson, of Indianapolis, Indiana, emphasized the necessity for cleaning and disinfecting premises and replacing reactors with healthy cattle.

Mr. M. J. Barker, Jr., of Mantua, Ohio, gave an excellent address on "Pure-Bred Breeders' Cooperation in Tuberculosis Eradication." Mr. Barker very ably emphasized this source of support to the campaign. Dr. H. M. Newton, federal inspector-in-charge for West Virginia, was then called upon to tell the story of the "Suppression of Tuberculosis in West Virginia," which he did in a very acceptable manner.

It was keenly regretted that Mr. L. P. Bailey, of Tacoma, Ohio, who was to tell of his twenty years' experience in tuberculosis eradication from a breeder's standpoint, was prevented from attending the conference by illness. However, a letter from Mr. Bailey and some press reports of speeches he made at one time when he vigorously opposed tuberculosis eradication,

were read by Dr. Zimmer. Mr. Bailey's letter which was of recent date left no doubt as to his complete conversion and entire sympathy with the eradication campaign at the present time.

Mr. N. E. Shaw, Ohio editor of the *National Stockman and Farmer*, next discussed publicity as a means of education in tuberculosis eradication and conveyed a needed and worthwhile message.

Dr. W. O. Trone, federal inspector-in-charge at Dayton, Ohio, outlined his procedure in the postmortem examination of a reactor and was followed by Dr. J. S. Healy, federal inspector-in-charge for Wisconsin, with a paper on "Identifying, Handling and Salvaging of Reactors." Dr. Healy has recently been doing some special work in this connection and he offered some excellent, constructive suggestions.

Following Dr. Healy, Dr. F. A. Zimmer presented a carefully prepared discourse on "Protecting and Maintaining Modified Accredited Areas." The need for much thought and careful consideration in regard to this phase of the work was impressed.

The prepared program was completed by Mr. E. M. Rowe, agricultural extension agent for Hancock County, Ohio, in a short but vigorous address. Mr. Rowe exemplifies one of the other reasons why the Ohio campaign is making such remarkable progress.

The proceedings of the conference are to be compiled in printed form under the direction of Dr. F. A. Zimmer, and requests for copies should be directed to him at Columbus, Ohio. The price is to be two dollars per copy.

The conference was invited to hold its next meeting in Michigan and undoubtedly this invitation will be accepted.

B. J. K.

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### **SOUTHEASTERN MICHIGAN VETERINARY MEDICAL ASSOCIATION**

The regular monthly meeting of the Southeastern Michigan Veterinary Medical Association was held November 10, 1926, at the Board of Health headquarters. A dinner preceded the meeting, which was called to order by President Schlingman at 7:45 p.m. The Program Committee reported plans for the December and January meetings.

Dr. Walter E. King, assistant director of the Medical Research Laboratories of Parke, Davis & Company, addressed the

meeting on "Recent Developments in the Field of Veterinary Research." Dr. King prefaced his remarks by recalling the names of quite a number of veterinarians with whom he had been more or less intimately associated during the past twenty years. He then proceeded to give the members a résumé of recent progress in the study of tuberculosis, with particular reference to immunization against the disease. Dr. King referred particularly to the work of Calmette. The subject of rabies was also dealt with in a comprehensive manner.

Dr. Charles H. Schultz, late of the College of Veterinary Medicine, University of the Philippines, gave a very interesting talk on "Veterinary Conditions in the Philippines." Dr. Schultz recently returned to the United States, after spending about three years in the Islands. During that time, he made many interesting observations on animal diseases peculiar to that country. Among the conditions to which he made particular reference was osteoporosis. In spite of many views to the contrary, Dr. Schultz is strongly of the opinion that this disease is associated with a mineral deficiency in some obscure way. He also spoke of the peculiar effects of certain poisonous plants on animals. He also reported many interesting observations on rinderpest, as well as a number of parasitic diseases.

A very interesting question-box concluded the program.

H. PRESTON HOSKINS, *Secretary*.

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### EASTERN IOWA VETERINARY ASSOCIATION

The Executive and Publicity committees of the Eastern Iowa Veterinary Association met at Anamosa, Iowa, November 12, 1926, at the call of Dr. F. R. Ahlers, president. Transaction of routine business and planning activities for the coming year were the order of the day. Dr. Henry Hell, of Wilton Junction, Dr. J. C. Glenn, of Norway, and Mr. Hershy, secretary, constitute the Publicity Committee. Working with them as a subcommittee are: Drs. H. S. Lames, La Porte; J. A. Jensen, Marshalltown; R. S. Gerard, Sigourney; F. E. Rugger, Lowden; T. J. Gilloon, Dyersville; F. E. Kochendorfer, Decorah; H. W. Rosengren, Ackley, and J. H. Spence, Clinton.

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The more eggs a hen lays before you put her in the breeding pen, the more females the eggs will hatch, according to the U. S. Department of Agriculture.



## NECROLOGY

### CHARLES C. MIX

Dr. Charles C. Mix, of Battle Creek, Mich., died suddenly at his home, November 10, 1926. Death was due to heart failure.

Born at Richfield Springs, N. Y., December 14, 1871, Dr. Mix attended public schools near his home. A love for animals developed at an early age and he decided to study veterinary medicine. He was graduated from the Ontario Veterinary College in 1904, and from the Chicago Veterinary College, in 1906. He practiced in the East for several years and located in Battle Creek about 1909. For several years he was a member of the teaching staff of the Grand Rapids Veterinary College.

Dr. Mix joined the A. V. M. A. in 1912. He was a member of the Michigan State Veterinary Medical Association and served as president, 1911-12. He was a member of the Michigan State Board of Veterinary Medical Examiners, 1915-1921. He was a member of the A. T. Metcalf Lodge F. & A. M., a Royal Arch Mason of Battle Creek Commandery No. 33 and a Knight Templar.

An ardent sportsman, Dr. Mix was president of the Izaak Walton League. He loved to fish and hunt and his annual pilgrimages to the north woods in quest of game were among the more pleasurable things of his active life. He had planned to start on a deer hunt the day of his death. Dr. Mix was well read, a good practitioner, a forceful speaker and upheld the best traditions of the veterinary profession at all times. He is survived by his widow and one daughter.

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### S. S. BAKER

Dr. S. S. Baker died at Des Moines, Iowa, November 10, 1926, after a protracted illness caused by stomach trouble. He was 77 years of age.

A member of the first class of the Chicago Veterinary College (1885), Dr. Baker practiced in Chicago until 1911. He was fond of military life and organized a troop of cavalry in Chicago. He was made a veterinary captain by act of the Illinois legislature. Dr. Baker was an expert drillmaster, having received his military training in Montreal as a youth of 17.

Dr. Baker joined the A. V. M. A. in 1890. He was a member of the Illinois State Veterinary Medical Association and the Chicago Veterinary Society. He was president of the Illinois Club of Chicago for three years. He is survived by his widow, one sister and two brothers, one of whom is Dr. A. H. Baker, of Chicago. Interment was made at Graceland Cemetery, Chicago, with military ceremonies.

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### IN MEMORIAM\*

Since our last meeting, the Veterinary Faculty has been bereft of its most distinguished member. At 9:30 on the evening of October 22nd, Dr. John W. Adams was called suddenly to answer the final summons. In complete mastery of all his faculties and apparently in robust health, his sudden taking-off was a great shock to his many friends as well as to his family.

He had been a member of this Faculty since 1893. During that time his engaging personality, his kind and sympathetic nature, his helpfulness, and his modest and unassuming demeanor won for him a warm place in the hearts of his students, his colleagues and the alumni, while his broad culture, his deep knowledge of professional subjects, the remarkable facility with which he could impart that knowledge and his ability to apply it in practice commanded their respect and admiration. Wherever his duties took him, he made the same impression and we were proud to have him appear anywhere as our representative of the veterinary profession.

His colleagues on the Veterinary Faculty, his students, and hundreds of members of the veterinary profession can testify to the many occasions on which he gave of his knowledge and skill fully and freely, without regard to his own comfort or convenience, and without expecting or thinking of personal advantage or reward. He treated all alike, high or low, rich or poor.

We deeply mourn his loss. But greatly as we will miss him in our faculty meetings and in our every-day contacts, and as much as his present and former students and the members of his profession will miss him, our loss is as nothing compared to that which must be felt by his family, and to them we extend our heart-felt sympathy.

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\*Minute adopted by the faculty of the School of Veterinary Medicine, University of Pennsylvania, at a special meeting held on November 4, 1926.

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**W. M. THOMPSON**

Dr. W. M. Thompson, of Red Bluff, Calif, died at his home, October 1, 1926, after a very brief illness. He was in his 81st year. Dr Thompson was a graduate of Ontario Veterinary College, class of 1872, and had been in California since 1877. He was Tehama County Veterinarian and a life member of the California State Veterinary Medical Association.

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**MARRIAGES**

Dr. F. E. McClelland (Corn. '08), to Mrs. Mary L. Weitz, both of Buffalo, N. Y., August 28, 1926, at Buffalo, N. Y.

Dr. E. F. Johnston (Ont. '22), to Miss Elsie Morrison, both of Carp, Ont., September 18, 1926.

Dr. J. C. King (St. Jos. '23), of Providence, Ky., to Miss Katherine Stanley, of Nebo, Ky., October 15, 1926, at Dixon, Ky.

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**BIRTHS**

To Dr. and Mrs. C. O. Johnson, of Silver City, Iowa, a son, Wayne Albert, September 10, 1926.

To Dr. and Mrs. T. M. Lee, of Watertown, Minn., a daughter, Betty Virginia, September 14, 1926.

To Dr. and Mrs. J. B. Still, of Winnipeg, Man., twins, October 29, 1926.

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**PERSONALS**

Dr. C. A. Hauschen (Iowa '26) has located at Brewster, Minn.

Dr. A. Sanders, Jr., (Chi. '08) is postmaster of Stephenson, Mich.

Dr. W. C. McLean (San Fran. '01) is health officer for San Mateo, Calif.

Dr. W. W. Shartle (Ind. '09), formerly at Andalusia, Ala., is now at Dothan, Ala.

Dr. E. S. D. Merchant (Corn. '12), is practicing human denistry in Manila, P. I.

Dr. Peter Garside (Chi. '10), of Bourbon, Ind., will spend the winter in Florida, as usual.

Dr. William R. Crawford (Corn. '24) has removed from College Park, Md., to Westminster, Md.

Dr. S. E. Springer (O. S. U. '04) has been transferred from Buffalo, Wyo., to Casper, same state.

Dr. James K. Strockbine (U. P. '26), of Watertown, Conn., has located for practice at Bedford, Pa.

Dr. W. J. Rumney (Ont. '25) is assistant to Dr. Alexander Slawson (Corn. '10), of New York City.

Dr. A. L. Danforth (Corn. '11), of Watertown, N. Y., was recently elected New York Governor of Kiwanis.

Dr. R. C. Dickson (K. C. V. C. '18), formerly of Shinnston, W. Va., gives a new address: Weston, W. Va.

Dr. C. A. Leuder (Corn. '02), former coach of the Cornell University crews, is pursuing graduate work at Cornell.

Dr. W. G. Hollingworth (Amer. '84), of Utica, N. Y., was recently made a fellow in the American Public Health Association.

Dr. R. R. Childers (Tex. '21), formerly associated with Dr. J. G. Kerr (U. P. '08), at Beaumont, Texas, is now at Jasper, Texas.

Dr. Walter Wisnicky (K. S. A. C. '26) has been appointed an assistant in the Department of Veterinary Science, University of Wisconsin.

Dr. J. P. Bushong (U. P. '06) attended the meeting of the American Association of Medical Milk Commissions held in Detroit, in October.

Dr. E. R. Cushing (Corn. '20) has resigned his position with the H. K. Mulford Company, Philadelphia, to enter practice in New Jersey.

Dr. John M. Handley (O. S. U. '08) has given us a new address: 120 Exchange Bldg., Union Stock Yards and Transit Company, Chicago, Ill.

Dr. J. H. Rietz (O. S. U. '03) has been appointed instructor in veterinary pathology in the College of Veterinary Medicine, Ohio State University.

Dr. W. N. Armstrong (Ont. '94) was re-elected president of the Jackson County (Mich.) Agricultural Society at the annual meeting held recently.

Dr. F. A. Humphreys (Ont. '19), formerly located at Yorkton, Sask., has been transferred to the Last Mountain Area, with headquarters at Govan, Sask.

Dr. A. R. DeMotte (Corn. '26), who spent the summer with Dr. L. L. Parker (Corn. '10), at Catskill, N. Y., has entered practice at De Ruyter, N. Y.

Dr. A. G. Boyd (McK. '18), with the California Department of Agriculture, has been transferred from Sacramento to San Diego. Address: 1205 Twelfth Street.

Dr. Fred Boerner (U. P. '12) has been appointed assistant professor of bacteriology in the Graduate School of Medicine at the University of Pennsylvania.

Dr. John W. Van Vliet (K. C. V. C. '22), who has been at the South Dakota Agricultural College, is now at the Maryland Agricultural College, College Park, Md.

Dr. Erwin D. Diehl (U. P. '20), of Philadelphia, Pa., is taking the special course in bacteriology and pathology at the University of Pennsylvania School of Veterinary Medicine.

Dr. Bernard Mann (U. P. '17), of Philadelphia, Pa., is taking the special course in diseases of small animals offered by the School of Veterinary Medicine, University of Pennsylvania.

Dr. P. A. Fish (Corn. '99) attended the funeral of Dr. John W. Adams, at Warsaw, N. Y., as the representative of the New York State Veterinary Colleges at Cornell University.

Dr. William C. Mitchell (U. S. C. V. S. '04), of Denver, Colo., is taking the graduate course in bacteriology and pathology at the University of Pennsylvania School of Veterinary Medicine.

Dr. H. A. Wilson (K. C. V. C. '13), state veterinarian of Mississippi, delivered a radio address on "Sheep Scab in Missouri," from Station WOS, Jefferson City, Mo., the evening of November 5.

Dr. J. B. Hollingsworth (McGill '98)), of Ottawa, Canada, was among the number of veterinarians who attended the recent convention of the International Association of Milk Dealers held in Detroit.

Dr. F. D. Holford (Corn. '02), of White Plains, N. Y., chief veterinarian for Borden's Farm Products Company, attended the recent convention of the International Association of Milk Dealers in Detroit, Mich.

Dr. A. J. Steiner (Iowa '18) was elected to the Board of Directors of the Lexington and Fayette County Society for the Prevention of Cruelty to Animals at the regular monthly meeting held in Lexington, November 1.

Dr. Harry Caldwell (Chi. '05), of Wheaton, Ill., fellowtownsman of "Red" Grange, was a visitor at the National Dairy Show, in Detroit, in October. Dr. Caldwell paid his respects at the JOURNAL office while in the Motor City.

Dean V. A. Moore, of Cornell University, addressed the nineteenth annual convention of the International Association of Milk Dealers held in Detroit, Mich., October 6-7-8, on the subject of "The Status of Tuberculosis Eradication."

Dr. R. A. Hendershott (O. S. U. '17) has resigned his position as a member of the veterinary faculty at Ohio State University to take charge of a bacteriological and pathological laboratory recently organized in the New Jersey Department of Agriculture, at Trenton, N. J.

Dr. Solon N. Blackberg (Corn. '18), formerly associate professor of veterinary physiology and pharmacology at the A. & M. College of Texas, is studying medicine at Tulane University, New Orleans. He is a member of the staff of the Department of Pharmacology and Therapeutics.

Dr. R. R. Birch (Corn. '12) has returned from his trip abroad. His visit included stops of several weeks at London, Copenhagen and Budapest. Shorter stops were made at Berlin, Leipzig, Hannover, Giessen and Eystrup, Germany; Vienna and Modling, Austria; Paris and Alfort, France. Dr. Birch made the trip under a fellowship granted by the International Education Board.

Dr. Charles W. Boyd (U. P. '95), of Sewickley, Pa., recently completed the construction of a modern and fully equipped hospital for small animals, which was opened on the evening of November 1, on which occasion he entertained the Sewickley Guernsey Cattle Club. It is pleasing to record events of this kind, indicative of such close affiliation of veterinarians with progressive live stock organizations.

What does American agriculture want with any more spokesmen? One of its troubles is that it has too many spokesmen now.—*E. S. Bayard in The Stockman and Farmer.*